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AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,
SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

LATE VICE-PRESIDENT OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS;

*Honorary Member of various Societies; Author of "History in Ruins," "Town Swamps and Social Bridges,"
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VOLUME FOR 1870.

LONDON:

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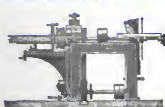


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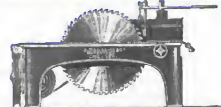
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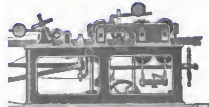
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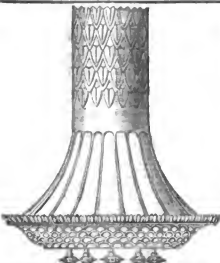
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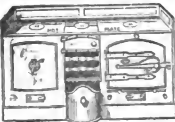


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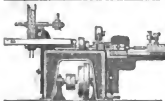
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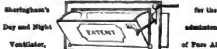
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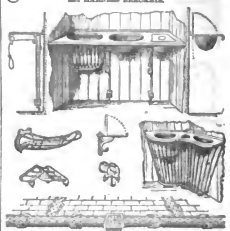
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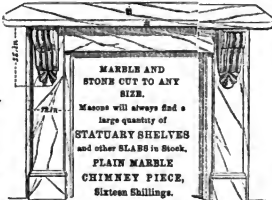
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The Builder.

VOL. XXVIII.—No. 1407.

Examples for the Workshop.



I have before me a dozen numbers of a monthly journal entitled *The Workshop*, concerning which we will give our readers a few particulars.^a The leading peculiarity of this work is its foreign and international character; for it is issued in four languages, with a view to its circulation in different countries in Europe and the United States. Local and even metropolitan building and art news are not of sufficient general interest to warrant translation into the tongues of nations having different sympathies; consequently these do not enter into the scheme. Hence this foreign journal deals with generalities and principles, leaving its claim to recognition to be founded mainly on its illustrations, which need no translation. This is, of course, a wise proceeding, otherwise endless confusion would ensue. As it is, when we come upon such passages in the English edition as "This country possesses the most superb examples of ancient jewelry in the world," the readers of the different translations must disentangle for themselves the kingdom or republic accredited with the wealth in question. Again, no foreigner appears able to master the difficulties of technicalities in the English tongue, and we are, consequently, disappointed with the intrusion of such words as *stiff* for *staff*, *porcelain*, *furniture*, *ornaments*, *balconies*, &c. Apart from shortcomings of these kinds, arising from its international character, we must pronounce the work worthy, and likely to be useful. The French decimal system of measurement is adopted for the scale of the illustrations. The aim of *The Workshop* is admirable. Artificers of all kinds, and of all the lands in which the four leading languages are understood, are exhorted, from every possible standing-point, as they have often been exhorted before, to

"Be not like dumb driven cattle,"

but veritable artists in the crafts they practise. *The Builder* is put under contribution frequently for information of cosmopolitan interest, we perceive, always with due acknowledgment. Each article contains one upon a topic of general interest, and no more, and this, contrary to frequent Continental practice, is unsigned. This is followed by about a dozen illustrations of objects of art industry, and supplemented with a large folded sheet of details. The objects depicted are of the most varied assortment a furnishing warehouse could produce, ranging from a punch-bowl to a pinlip; as well as of structural use, such as ceilings, chimney-pieces, parapets, and summer-houses. We will take the contents of the first number as a specimen. The opening article is entitled "Our present Need," then follow designs for ornamentation,

a memorial stone, a centrepiece, a carved ebony sideboard, a seal and paper-cutters, a modern "Moresque" carpet, a modern ceiling in stucco, wrought-iron grilles, specimens of simple wood sawings, modern articles of jewelry; and after these illustrations come a quotation from the *Builder* relating to archaeological excavations in Rome; a recipe for a coat of oil on cement, a note of experiments made by the French Government resulting in the knowledge that zinc when used in cisterns is apt to dissolve, and recommendation that all water-tanks on board ships should be lined with tin, and word of museums for art and industry contemplated in Dresden and Cologne; and finally a great sheet of details opening out wide enough to cover a large space on a joiner's bench. Looking carefully down the leading columns to discover what "our present need" is supposed to be, we find the writer divides it into four branches—1. The repudiation of naturalism; 2. The extinction of all extravagances and follies; 3. The formation of a sense of the beautiful; and 4. The improvement of the artisans themselves into artists by schools of art in as many places as possible. He says "the actual condition of matters connected with industrial art is so critical that extraordinary measures must be resorted to for its regeneration." He compares taste to the "sick man" known in all continental as well as insular circles, and declares, in the words of our own poet, that there is something rotten in the state of Denmark, thereby implying degeneracy in art, and no offence to the descendants of the old seakings. What has been said over and over again concerning the hideousness of the domestic furniture in the houses of the middle and working classes in this country, also applies, it seems, to that of all the lands in which the *Workshop's* four languages are spoken. Explaining the present position of taste and art, the writer remarks:—

"In ordinary middle-class houses, where the appliances of luxury and art are often unknown, as one observer remarks, through all these productions, in a sort of unconscious way, as if it were a thing of course. In tables, chairs, and all articles of furniture in wood and polished flowing lines usurp the lines of beauty; and where corners and panels are to be ornamented, a few scrolls are introduced, and that is thought sufficient. The other and in paperhangings, curtains, furniture, stuffs, &c., flowers and leaves of natural form and colour are preferred. It is different when education and luxury, or at least comfort, bear rule. Here, indeed, the Rococo style is also seen, and especially of late; not, however, in mere unconscious fashion, but a style taken up again, and limited consciously with artistic intention."

But it is this continuous return to old styles and imitations of them that has been the ruin of taste, the author urges. The artistically educated part of the world is divided into cliques, and one set does homage to Paganism, another to Medievalism; and another, aware of the gulf which separates modern civilisation from the middle ages, cultivates the Renaissance styles. These last have most charms and capacities for him; for in these alone, he believes, is progress possible. Instead, however, of pursuing the road opened out by the great change in art indicated by the term Renaissance, we have wandered from it and got back again to the styles of Louis XIV., XV., and XVI. of France, which are all more or less unconstructive and confused. Moreover, we have gone astray after the art of the Eastern world, with, however, no definite result, except in carpets, curtains, and hangings, to which he might have added, if only as a tribute to the insular popularity of the willow-pattern plate, ceramic ware. He continues,—

"In forsaking the true path, we, the most civilised nation of the world, are grasping after shadows, which constantly elude us, the result being a confusion of styles badly copied or imitated, their characteristic features frequently misconstrued, and adopted more as a matter of fashion, than as a true and living utterance of the necessities and feelings of the age. Their details are often so mixed together that we sometimes see, illustrated in one and the same object, a conglomerate of the world's history, an intermixture of centuries between its head and foot."

As though such heartless man was not a sufficiency of evil, art is beset with another grief, which is called naturalism. This knack of re-

producing natural forms in objects destined for domestic use, the writer speaks of as the suicide of art. The term "fancy articles" applied to such items as miniature hats, or jockeys' caps, serving for instandards, candlesticks, and match-boxes, he concludes must have arisen from the fact that such devices were the decrepit fancy of some brainless head." And the substitution of one material for another, or the treating one material in such a manner that it resembles another, as when a porcelain vessel is made to look like a wooden tub, brings down equally severe censure. Of course, there is nothing new in these opinions. For the last five-and-twenty years we have taught the same doctrine ourselves; but here we have it couched in such generalities as will be understood and appreciated by the agile smiling Alphonse in the atelier of a French manufacturer, as well as by the broad-shouldered, long-haired Ludwig who labours in a German workshop; the olive-skinned, black-eyed Pippo of an Italian studio; and the ruddy, fresh-coloured English workman.

Having drawn about him the difficulties to be encountered in developing or originating a new style, the writer begins to despatch them, one after another, in this fashion:—

"First, we have to contend with that naturalism which now appears our most dangerous enemy. Art must be cut off from the unwhimsical cord of nature in order to feel her freedom. This must become the mistress, nature the servant who prepares the materials, while the genius of art reverses the case. We must arrive at the persuasion that vegetable or animal types are not to be employed just as nature produces them; but that the genius of art must take up his position as absolute master, and dispose and transform at his discretion. Hence the necessity for conventionalism, from which, however, does not ensue the adoption of any distinctive past style."

Alphonse will lift his shoulders and eyebrows simultaneously with his cap, as conventionalism is thus presented to him, wishing, wistfully, doubtless, for more light. Ludwig will send a thought or two roaming through the nearest museum of art-treasures, to ascertain whether, what he remembers of its beauties, tallies with this assertion. May be, as the Italian faces the conclusion, the gay remembrance will dart into his mind that he has seen it somewhere before, and honest John Brown, with a sigh or a laugh, according to his humour, will admit there is nothing new under the sun. The more we can elevate our pursuits the more pleasure we are sure to find in them; and when our work is pleasure, it cannot be otherwise than pleasant to work, and a large piece of the sting is taken out of our doom to toil. If all producers in the various branches of art-industry come in time to understand the principles upon which they should work, the why and wherefore, as they are familiarly called, the aspect of everyday life will be thoroughly changed.

Among the illustrations there are several that deserve mention, for different reasons. One of these is a summer-house. Here we have an exceedingly picturesque object that is almost unknown in this country; for the melancholy alcoves that are our nearest approach to it give no equivalent for the fresh charm suggestive of Swiss forests and chalets these structures impart to a landscape. The plan of it is cruciform, and the entrance is formed by leaving the end of one of the arms of the cross open. The enclosure is latticework, though the roof is of slate. Details of the ornamental woodwork of the spandrels, &c., are given an eighth of the full size.

We are attracted by a garden-door. It is a simple piece of woodwork formed of laths, arranged at regular intervals, crossings so cleverly notched, with equal precision, as to form a very pretty open-work design. This is a garden-door in the villa of Josef Bey, Cairo, designed by M. Stadler, of Zurich, with a mixture of Moorish and Swiss sentiment. Ornamental woodwork generally, we perceive, received at the hands of the editors of *The Workshop* much attention, as it behoves dwellers in the neighbourhood of great continental forests to give. Some clear

^a *The Workshop*. Edited by Professor W. Bunner, I. Schmitt, and others. James Hagger, 67, Paternoster-row.

woodwork panels are shown, and finials, ornamental gable-ends, and crests in wood are given, as well as many specimens of furniture. Jewellery, too, is somewhat profusely illustrated, and, in conjunction with crystal manufacture, is treated at length in the letterpress of several numbers. Bookbinding and fancy leather goods, patterns for weaving, carpets, and tapestry also find illustration.

The varied nationality of the work results, as might be expected, in some contradictions. Whilst one writer deprecates the low eth or the utter absence of taste at the present day in the industrial arts, another congratulates the world upon the fact that the sobriety of trade has prevented manufacturers in some branches from being guilty of the extravagances that have brought high art to the chancel-look like him to one and green to another, whilst a third will declare it is black or white; and the same variations in time and chance apparently conduce to equal diversity of opinion on other matters. But there can be but one mind about the propriety of bringing beauty into the workshop. Alphonse, Ludwig, Pippo, and John Brown will each, doubtless, have his own standard of loveliness, as surely as he knows the secrets of his own heart; but when he has looked upon those of his neighbours, it is tolerably certain he will set to work to make his own higher. As a work that has this end in view, we must commend the journal before us; and we shall best advance its interests by pointing out there is room for improvement in the English edition.

THE GIBERTI GATES IN THE SOUTH KENSINGTON MUSEUM.

THE Southern Court of the South Kensington Museum has been temporarily reduced in length in order to allow space for the workmen engaged in the prolongation of the building. A screen forms the present barrier, and the occasion of the change in distribution of some of the contents of the court which has thus become necessary, has been seized for bringing together in one comprehensive group the unrivalled collection of electrotypes, copies of famous works of art, in gold-plate, silver, bronze, and other metals, of which the Museum has so good a right to boast.

Chief among these products of an art which must be called yet in its infancy, though an infancy like that of Hercules—is the noble reproduction, by Messrs. Franchi & Son, of the famous central eastern gates of the baptistery of San Giovanni at Florence, executed by Lorenzo Ghiberti, during the first half of the fifteenth century. Permission to take *grutta-percha* moulds of the entire composition was given to the agents of the Museum by the Italian Government, when that rule was Grand Ducal. The popular indignation appears to have been roused by the operations of Signor Franchi; opinions being divided as to whether the noble bronzes were being destroyed, or only being prepared for deportation. Those who might have been reassured by the tender care shown by the workmen engaged in the tedious and delicate process of moulding, yet took the practical and thoroughly Italian view, that if copies were sent to England, Englishmen would no longer come to Florence to see the gates. The time-honoured argument "Sirs, you know that by this craft we have our wealth" prevailed, and the operation was suspended by order of the Government.

Fortunately for us, and fortunately for art in general, there existed in Florence a copy of the gates in plaster, taken some seventy years ago. Signor Franchi obtained permission to mould this set of casts, undertaking to furnish the Italian Government with a new copy, as that from which he took the moulds would be discoloured by the oil used in the process. The gates have been thus reproduced. The architecture has been modelled from the actual structure. It is the opinion of those who are well acquainted with the gates, that the copy produced from the plaster cast is superior to any which could have been taken from the actual bronze, even in the climate of Florence, has produced an effect in the diminution of sharpness of outline which was very perceptible on comparing the copy with the original. It is certain that incipient decay has made its mark on some of the wonderfully rich ornamentation of the architecture, which is faithfully represented by the electrotypes.

It may almost be said that it is now for the first time that the English public has the oppor-

tunity of seeing this marvellous product of the skill of Ghiberti. Owing to want of space for their fit display, these noble electro-castings have hitherto been inconveniently lodged, and not only hidden from the world, but subject to the hostile action of the damp, which has written its name in unseemly streaks of verdigris over more than one panel. This damage will be removed forthwith, by the use of dilute sulphuric acid, which will be carefully washed off, the moment that the copper begins to show a bright surface. We recommend the results of the experience of Signor Franchi, which is adverse to the use of the sulphate of ammonia, to those who are engaged in the purification of Torregiano's famous grille, in King Henry VII.'s Chapel at Westminster.

The frame of the gates, somewhat meagre and poor in its architectural proportions as is generally the case with the woodwork of Italy,—(it is a design taken from a wooden structure, not from one of stone),—is covered with embossed foliage, fruit, and flowers, in *nudo* and *alto rilievo*, of the most consummate workmanship. The forms are taken from the actual *fauna* and *flora* of Italy, and their disposition recalls (and perhaps suggests) that of the plantiers of the Loggia, designed by Raffaele, of which there are good copies in the Museum. Grapes, apples, nuts, plums, and other fruit, trailing abouts of the vine, and graceful forms of mingled vegetation, are interspersed with sharp-billed birds, with the little Athenian owl in the midst, and an eagle in the centre.

The doors themselves consist of two leaves, each of which is divided into six panels, representing scenes in Old Testament history. Around the panels the border is enriched by alternate busts and whole-length figures, twelve of each to each leaf. The former, and the features of the latter, are said to be contemporary portraits. The likeness of the artist himself, and of his father-in-law, the youngest and the eldest heads represented, are admirable for their force and life, and prove that, if the *Renaissance* had not in the art of Ghiberti attained to the purity of Greek taste, it yet fully rivalled the skill of the noble portrait sculptors of Imperial Rome.

The treatment of the panels is essentially that, not of bronze casting, but of *repoussé* goldsmith's work. It requires no small acquaintance with the elements of hand which may be attained by the cunning bronzist, in the successive or alternate use of wax, and of sand and plaster, in moulding, to allow the imagination to realise the fact that these bold and complicated groups, containing in nearly every instance some one or two figures that seem almost detached from the surface, together with others, of which the outlines are barely indicated by the extreme delicacy of the relief, are really cast, and not hammered or chased.

The pictorial grouping of the designs of Ghiberti differs no less widely from that of work produced under the canons that regulate the art of the draughtsman, as now fixed, than the execution exceeds in its audacity and finish the capacity of the moulders of the present time. Each of the ten scenes represents, not a single incident of the life, but a summary of the entire history, of the patriarch, or sacred hero, whom it commemorates. Thus the first panel, in the upper part of the leaf facing the left hand of the spectator, tells the story of Adam. A cloud of angels, traced with the most delicate touch in a scarcely perceptible relief, shadows forth the song of the morning stars,—

"When the Greater grew,
His constellations rose,
And the well-balanced world on hinges hung."

The same figure, majestic in its dignity (although grateful to none but the sensuous southern people in any material presentation), in another part of the composition is raising Adam from the dust. Yet again HE appears lifting the graceful womanly figure of Eve from the side of her slumbering helpmeet. Yet again HE watches the angel who is expelling the fallen pair from the Romanesque gate of their lost terrestrial Paradise. Full as this wonderful sculpture is of repetitions of the same figures, of the human pair, the angelic ministers, and the more awful form of the Creator, the separate and successive incidents of the story are combined in a glorious anachronism, and the magic command over the arrangement of the various subordinate incidents into one harmonious composition is a triumph all the more wonderful inasmuch as it compels us to yield the highest admiration to a work of

which we cannot fail to condemn the principle on which it is designed.

The same irreconcilable harmony, for such it must be considered, is displayed, with varying, but almost always admirable, result, in each of the two panels. In each is to be seen the same charming combination of a full relief of some principal figure, approaching to the character of sculpture in the round, with a faint and fairy-like tracery of landscape, or of figures dying into the background of the composition. This combination of the graceful and the bold, of the female and male elements of beauty, may be found in the works of some of the greatest artists of the immortal period of Greek art, such as Pyrgoteles. It is originally, and perhaps essentially, the style of *intaglio*; but its application to cameo or relief is natural and appropriate. We could cite Greek groups in which the effect of this mode of contrast is most masterly, but we can remember no instance of Medieval work, or indeed of elaborate grouping of any age, in which the method has been introduced with such admirable success. Combined with what we have called the anachronism of the simultaneous representation of successive incidents, this union between two opposite methods of treatment gives to the masterwork of Ghiberti a charm that is magic and unique.

The second panel gives the story of Cain. We see the first-born infant hanging on the bosom of his mother, while the grand parent of the Hebrews races till the earth by the sweat of his brow. We see the boys at play, the young men parting to their several occupations, pastoral and agricultural. We see each bringing an offering to the altar of his toil, while the Lord has respect unto Abel and his offering, although unto Cain and his offering he had not respect. We see the very fall of the fatal blow, from the club wielded by a figure of wonderful vigour and life, on the twisted and twisted limbs of the first slain shepherd. We see the questioning as to the murder, and the exit of Cain to wander and begeth a son. Again, in the magic grouping of the scenes, we trace the continuity of the story as if told by a series of dissolving views, the rich effect of the entire panel starting into actual life from this wildly blended detail.

The story of Noah is no less fully told. A wonderful air of mythologic antiquity is given to this composition by the presentation of the ark and the mounted form of the Egyptian pyramid. The window of the sacred legend is open near the summit, and a long wisp of birds streams out, until it is lost in the distant clouds. Below is the no less duly recorded door, by which stand the four human pairs, while a lion and a camel swell out into an attractive relief from the mass of their fellow beasts and fellow cattle. Under a starry night and rest be a piece of *capriccio* such an effect by the truth of the moulding, like the father of the vine in sorry plight, his reverent and irreverent offspring lending dignity and passion to a scene that, less nobly rendered, would be grotesque. The same family surround the altar of thanksgiving in another part of the panel; and the mind returns to the signal of promise and of protection from the sterner moral of the bacchanalian lesson.

Abraham bows to meet the majestic three, while Sarah laughs her welcome from the door of the tent. The sacrifice of the promised son, bound and kneeling, in striking relief, on the altar, is arrested by the hand of the angel. Other scenes in the patriarch's history are indicated, and force and richness are given to the composition by the figures of two young men, reclining, in conversation, on the ground, who appear to be the servants left behind by the obedient and faithful patriarch when he led his son with the wood for the altar.

Jacob, again, appears in every best-remembered incident of his somewhat shifty and ambiguous career. But Ghiberti has reserved the signa from the memory of his mother, Rebecca, by representing a scene, omitted in our present copies of the Book of Genesis, though hinted at elsewhere, in which the Almighty appears to her in a dream, and tells her how to obtain the birthright for the son to whom it was given by promise and by gift. The fair, like forms of the daughters of Beth are rescued from any one more blood run with any but ripple through the reins to sympathise rather with Esau than with the weariness complained of by Rebecca.

Joseph is illustrated by, perhaps, the least satisfactory of the entire series of designs. A numerous double group in alto-relievo occupies

the lower portion of the panel, the cup being found in Benjamin's sack affording a theme for grand pathosomatic treatment, both of contenance and of pantomimic gesture. Jacob is kissing Pharaoh on a dais to the left; but the least admissible part of the composition is an elliptical classic peristyle, inconsistent with the Egyptian scene of the story, in which figures in very low relief, but lined like life itself, are hastily storing up the golden grain of the years of plenty.

Beneath the panels last described is scratched, rather than cut, on the cross moulding, in rude Latin characters,

"*Laurenti Causa di Ghiberti
Mira arte fabrilis.*"

The adjective is, indeed, appropriate.

Moses and Joshua, David and Solomon, form the subjects whose history is illustrated by the four lower panels. In the last, the reception of the Queen of Sheba by the wise king gives occasion for another of those professional or rather theatrical groups of which we cited an example in the story of Joseph. The group comprising the walls of the devoted city is interesting from the key which it affords, in the attitude, and Roman helmet and armour, of the captain of the house of Israel, to the personality of one of the belated statues.

It is difficult to identify some of these admirable figures. Besides the Joshua thus indicated, there is a very noble shield-bearing draped figure, which probably represents Gideon. As to Samson, powerfully treated in the nude, there can be no mistake, though the pillar by which he stands is conventionalised into a mere symbol. Moses is always to be recognised; David, and probably Ezra, the latter holding a scroll, are intelligible; but there is one figure, a young man, in Roman armour, with his hands lifted in prayer, who has puzzled even the copyists of the gate. His eyes are fixed on a small disc, by the side of the coved niche in which he stands, on which a face, and the indications of wings, seem to denote a cherub. The only explanation that we can offer is that the youth is intended for Samuel, or the deity introduced as a symbol of the Bath Col, or voice which he heard audible in the darkness of the Tabernacle.

Four reclining figures, niched in the upper and under cross mouldings of the gate, rivet the attention by the resemblance which they bear to the awful Morning and Evening of Michelangelo in the Medicean Chapel. The original idea very likely was taken from the ordinary pose of a classic river god, but the marvelous grandeur of these little unexplained statues must have sunk into the very soul of the mighty Florentine, who exclaimed that this masterpiece of Ghiberti was worthy to be the Gate of Paradise.

The gates we have described were the second pair executed by Ghiberti for the baptistery. The earlier pair were divided into panels of a very ancient form,—a lozenge intersected by four arcs of a circle,—which had been introduced by Pisano into the pair which he had previously executed. These were subsequently removed from the centre doorway to make room for this second work of Ghiberti, and the three noble gates were thus symmetrically arranged. The date of the work of Pisano is A.D. 1330. Ghiberti, who lived from 1378 to 1455, was occupied on his own gates from his twentieth to his sixtieth year. The earlier pair represents scenes from the New Testament, and the statues are those of the Evangelists, the four great doctors of the Romish Church, the prophets, and the sylvans. They are described in some detail, although not without errors of considerable magnitude, by Vasari, who does not give any description of the second and more beautiful pair.

A similar combination of the circle and the triangle, or rather the lozenge, is, however, as old as the year 1180, which is the date of the execution, by Bonanno, of the Porta di San Rainero, or gate of Saint Reiniger (Rienzo) in the cathedral of Pisa, an electrolyte copy of which is most instructively placed close by the glorious inspiration of Ghiberti. It will not do to describe, or even to examine the earlier and more archaic work, after fostering the taste on the exquisite forms wrought out into such life-like beauty by Ghiberti. Let the visitor have the self-command to examine Bonanno's work first. It will well repay minute attention, and the interest which attaches to it in consequence of the precise determination of date, is of the highest order. The unhesitating

conventionalism of this twelfth-century modelling is surprising, and yet a sort of vigorous treatment underlies it all. The devil in the temptation, with trident, bird-like feet, and a tufted tail, the figure being about half the size of that of Christ, is a marvel of impotent monkish fancy. The baptism is conventionalised into an immersion in a sort of bath. In the triumphal entrance into Jerusalem, human figures grow out of the gates of the city and the palms of the palm-tree. An Arabesque impossibility, that contrasts very quaintly with the formality of the little figure who is spreading a shirt, sleeves and all, for the ass to walk over. The scenes, twenty-eight in number, all illustrate the life of Christ. Rude letters implement the efforts of the artist to tell of the cruelty of the "Erode" or the raising "di Lazarus." On the frize at the top is represented the "trilegium" of the Ten Days, with wonderfully quaint angels; and the celestial reign of Christ. This gate would be much improved in effect if it were surrounded by a copy of the rude frame, stolen and transformed from a heathen temple, within which the original actually stands.

The gates of Ghiberti have been repeatedly engraved. They are also represented by a photograph in the portfolio of the Art Library. But the most exquisite record of their beauty is from the well-known barin of the Cavallero Lasinio, in a series of engravings of the panels, published at Florence. Curiously enough one or two of the details of these engravings are incorrect, a bearded figure, in one of the niches, being drawn in a sort of turban; but the general fidelity is remarkable, and the series of prints gives a clearer idea of the work, not only than the photograph, but than can be obtained even by actual view, without prolonged study.

From the quaint, monkish figures of Bonanno, down to the admirable *reposeful* work of the famous Milton shield, almost every stage of execution in metal work is represented by the electrolytes that are grouped over the gates of Paradise. There is chased and beaten armour from the ateliers of the famous Milanese armourers of the sixteenth century, a suit worn by Francis I., adorned by masks of lions, and another still more elaborately wrought suit belonging to the same gallant monarch. There are massive tables, lamps, gueridons, and mirror frames of silver or of silver and ebony wrought by English goldsmiths for the seigniorial halls of Knole. There, in partially oxidized silver, is a portrait statue of Henry IV. of France, in his twelfth year, an exquisite work of art. There are the Coronation Plate of the English sovereigns, the relics of ancient Roman goldsmith's work, known as the treasure of Petrosina, and a silver table, *ferreges* and *ferreges* from Wiener Castle. Copies, indeed, they all are, but copies so true to the original, owing to the wonderful portraiture effected by electrolyte, that the difference could hardly be detected by any but the most skilful expert. Let those who would know how the arts of the sculptor, the founder, the modeller, the metallist, and the goldsmith, are but portions of the same plastic craft, pay a speedy and a careful visit to this scene of metallurgic triumph.

WORKS AT THE HOUSES OF PARLIAMENT

Since last session several alterations of importance have been made in the interior of the Houses of Parliament, under the direction of the architect, Mr. E. M. Barry, R.A.; and various works, to which allusion has before been made in the pages of the *Builder*, have been carried on to completion. The most striking changes effected are in the central hall, the witness-hall, and the three corridors leading from the central hall to the Commons lobby, the Peers' lobby, and the river-front committee-rooms respectively. Our readers will, doubtless, remember the discussions in the House of Commons last session, on the proposals brought forward by Mr. Lyard, the late First Commissioner of Works, for the decoration of the central hall, and its embellishment with mosaic. The result was the reduction of the vote by less than 2,500*l.* for the execution of this reduction on the design is very evident now that the work is so far completed.

The dull brown-colored paint has been removed from the stonework of the central hall and its corridors. The stone has been covered with a preservative composition which will enable it to be washed; and as the composition has in no way discoloured the surface, the whole

of the stonework is now clean, and shows the natural colour of the material. The carving has been painted stone-colour, as it was not possible, without great expense, to remove the brown paint from it. The stone archways leading to the Peers' and Commons lobbies, and to the river front, have been enlarged, and light glazed oak screens, with plate-glass above them, substituted for the stonework, in order to admit more light into the lobbies. The windows in the corridor to the river front have been enlarged, and skylights have been introduced into the rooms at the angles of the hall, where gas was formerly necessary in the day-time. In the centre of the groining of the hall an opening has been formed for the admission of light from the lantern above, and in the witness-hall, at the foot of the committee-room stairs, the windows have been widened, and openings made in the walls for the same purpose. The colour has also been removed from the stained glass here and in the Peers' and Commons corridors, and the effect of the changes generally will be greatly to increase the light in the interior of the building. None of the main pictures are yet completed in the panels allotted to them over the four great archways of the central hall. Mr. E. J. Poynter, A.R.A., is the artist employed for the cartoons of these works of art, which are to be executed at Venice by Messrs. Salviati. One picture, the St. George, is completed, and is now being fixed. The whole of the panels of the groined roof of the hall are filled with mosaic on a gold ground. They represent scrolls of roses, thistles, and shamrocks, interspersed with the royal cypher, crowns, &c. The ribs of the groining have been gilded and decorated to correspond with the mosaic, and as the lower part of the hall is quite white and unadorned, the work at this point appears to be incomplete, as indeed it is, for the reason we have just explained. The architect has already stated publicly that the diminution of the moneys at his disposal was not decided on until after the work of decoration had been commenced, according to his official instructions, at the higher estimate, and he has therefore evidently been obliged to finish the mosaic ceiling, and to leave to a future day the decoration of the rest of the hall to harmonize with it. No alterations have been made in either House of Parliament or their respective lobbies. In the Royal Gallery the eight niches are now filled with statues. Mr. B. Philip is the sculptor, and the statues are wholly gilt, with a very satisfactory effect. The statues represent the following monarchs:—Alfred, William I., Edward III., Richard I., Henry III., Henry V., Queen Elizabeth, and Queen Anne. In the Queen's robing-room, Mr. Armstrong is proceeding with a series of bas-reliefs of oak, representing scenes from the "Morte d'Arthur." This fine room, with its frescoes by the late Mr. Dyce, is now nearly completed, and will, we believe, be added to the portions of the palace to which the public is admitted, soon after Easter.

Works are still proceeding in the Royal staircase. The stained glass has been altered to admit more light, portions of the doors have been pierced and glazed, and the four grins at the top of the staircase are being decorated with mosaic. In St. Stephen's crypt, the baptistery has been completed, and inclosed with elaborate wrought-iron gates by Messrs. Hardman, and with this work the restoration of the crypt is now finished. The painted decoration of the baptistery has been done by Messrs. Clayton & Bell. Outside the palace, a work of some peculiarity and importance has been carried out at the north-east corner of New Palace-yard, by the construction of a subway passing under Bridge-street to the north-east angle of the street, close to the Underground Railway Station on the Thames Embankment. The subway is intended not only to afford a safe and convenient means of crossing the crowded street, but is also meant to give access to the Westminster Bridge Station of the Metropolitan District Railway, and also to the steamboat pier. The Metropolitan Board of Works is taking active measures to prolong the subway to the river pier, and this work is expected to be completed before Easter. Nothing, however, appears as yet to have been done by the railway company to connect their station with the new approach. The subway is a continuation of the cloister or arcade recently constructed on the east side of New Palace-yard. It passes under Bridge-street, at a level slightly below the surface of the paving of the cloister. It is in form a passage about 12 ft. wide, with

a segmental arched roof, terminating at each end in a square space covered by a stone gable. One of these spaces, viz, that at the north end, will form the entrance to the steamboat approach. In the middle of the length of the roof of the subway, an opening is made for light and air, so contrived as to exclude the rain, and also to form a refuge, in the middle of the road above, for persons crossing Bridge-street. By night the subway is lighted by gas lamps, fixed to the arched roof after the manner of those used in railway carriages. The interior of the subway presents a glazed white surface throughout. This is not formed of white tiles, which, in such a situation, might fall off, or be liable to accident; but the walls and arched roof are themselves glazed so that the white lining of the work forms a part of its construction. The subway is perfectly light, and well ventilated, and will doubtless be found a great convenience by members of Parliament and others who, by its use, and that of the steamboat subway, will be able to pass between the Houses of Parliament, the railway station, and the Thames Embankment, without encountering the risk and inconvenience attendant on crossing a dangerous thoroughfare. Flights of steps lead from the north end of the subway to the level of Bridge-street and the Embankment. The whole work is completed, but no arrangements have as yet been made to give the public the benefit of its use. Messrs. Field & Co. were the contractors for the subway, and for the mason's work generally. The decoration of the central hall has been intrusted by the architect to Messrs. Crace, and Mr. E. C. Pressland is the Clerk of Works. It is intended to have everything except the three remaining mosaic pictures completed before Parliament meets, on the 8th proximo.

A NOTE FROM NORWOOD.

In the vicinity of the Crystal Palace, where everything is supposed to be in undeniably good order and good taste, we are sorry to say that there are many things which are out of order and in bad taste. Norwood, Upper and Lower, south and north, the New Town and the Old, wastes the scavenger and the gutter-cart, the pavior and the drain-maker; but first it requires a few proper road-makers; and last, though not least, it wants a sanitary inspector, who will do his duty (supposing it has one). It is all very well to walk through a few leading thoroughfares or thoroughfares, and express one's admiration of sundry detached villas of a nondescript style of architecture, with garden-plot and borders to match; but when we enter a town in pursuit of our mission, it is not to lounge along its pleasant broadways, but to plunge into its corrugated defiles and back-lanes, where nature and human nature are at strife.

Norwood was once an insignificant locality, known mostly through its title of gipsy life and adventure. Norwood is destitute of monumental interest of the past. It has no crumbling castle-wall, or ivied ruin, or memorial rockeries. Its hills and undulating vales and streams, and the vestiges of its ancient wood, sacred to gipsy life, alone remain. But acres and acres of fallow have for the last fifteen or twenty years disappeared, and the once goose-crowned and woody slopes are now crested with the habitations of man. Wandering tribes and flocks and herds have given place to the practical and more domesticated bipeds. Norwood, proper or straggling, to-day, taken as a whole, is a populous district of country; and this growth of prosperity and humanness is owing to the erection and existence of the Crystal Palace.

We do not like to find fault if no fault exist; but we would calmly ask of Norwood folk, are they satisfied that their roadways or footpaths are in anything like proper vehicular or pedestrian condition? Enter the town from either the High Level or Low Level Railway Station, and take the rake of the road from the lower to the higher, or vice versa, and the picture along the line of route, under foot or in sight, is not sanitary or socially pleasant. The road is in ruts, and the side-channels or water-courses owe more to nature and the elements than to man, for fulfilling their requirements. On the high level thoroughfare the road, it would appear, is making rapid advance to annexing the footpath as part of itself, and both seem thoroughly agreed as to the desirability of union. The ugly and wretched wretched, beaten boarding that encloses the Palace Grounds along the high road, front and flank, gives a most

dreary and jagged look to the approaches to the Palace. But we suppose this cannot be helped at present, as it would take more funds than there is a possibility of obtaining to replace it either with a dwarf wall with a fence, or an iron railing. In justice to the directors, it must be said they are, and have been, making strenuous and energetic efforts to render the Crystal Palace attractive to the public, and they cannot yet be expected to do much externally.

Not so with the Croydon authorities of Norwood. They might do much, for there is a large amount of property and wealth concentrated in the town. Buildings are still on the increase on all sides, though there seems to be a large number of houses to let or to be sold.

On the Anerley-road, which, by-the-by, is wretchedly squalid and broken, houses are being erected, and the carcasses of others are under the auctioneer's hammer.

Opposite Westow-terrace there is a plot of ground which can well bear the appellation of "nobody's land," and seems to be designed for no other purpose than that "rabbits may be shot here." Mark ye, this "dead dog" land faces the centre of a fine row of shops in a populous and otherwise respectable thoroughfare, a stone's throw from the entrance to the Palace, and about fifty yards from the Royal Hotel. This "nobody's land" is partly paved in about breast high, and is a receptacle for every conceivable refuse and offal—cans, tins, and human. Is it in Chancery, we wonder, or does it belong to some gipsy squatters? But let us pass this plague-spot,—this half-garden and whole sink, and leave it to the tender keeping of the sanitary magistrates of Croydon and Norwood proper.

All the facilities exist in abundance for making Norwood, Upper and Lower, a healthy place; and whilst the leading thoroughfares are pleasant in dry weather, the lower quarters of the town, and the dwellings of the humbler inhabitants, are altogether overlooked.

In Norwood New Town, a quarter lately sprung into existence, the streets and lanes show perfect sludge of from 6 in. to 1 ft. in depth. We assert this without the least exaggeration. There is hardly any attempt here at a pathway, and where there is, a wooden edging, with plugging or stays of the same material driven into the canal, keeps the footway and the street from amalgamating. Not a flag or a paving-stone is to be seen in this primitive region, although in one of its lowest depths, 50 ft. below the level of the sea, a "Mission House" of some religious sect broke in upon our view.

Down in this dell, dingle, or defile, with an incline of nearly 45 degrees, the brewer's cart is not unknown, and the signboard is conspicuous, and speaks of the brush, though the streets and footpaths do not.

Without enumerating the streets or lanes by name in Norwood New Town, we may simply and truly say that every thoroughfare is a perfect mud and sludge, squalor, and everything nasty besides. It has some lamps, "few and far between," and we suppose when the drain takes the place of the open pool, and the ploughed street is flanked by the flagged path, the apparition of the taxman will not be altogether an agreeable sight to the pioneer inhabitants in this quarter.

Norwood with its surroundings is pleasantly situated: it is easy, and is not overburdened with poor. Its labouring population are mostly connected with the building trades.

If Croydon Local Board wishes to do its duty, it should pay a little more attention to the roads, footpaths, and drains in Norwood and Anerley; for we believe it has the local government of a portion of this latter district in its hands alone.

Alas, we see that there is an announcement that tenders will be received for the construction of sewers by the Croydon Local Board. It is to be hoped that some of the first constructed will be in the Norwood and Anerley districts.

Growing-sweepers in tender years, of both sexes, are in abundance in every quarter of Norwood, and the visitor is sure to be importuned to a degree that may either soften his heart or stiffen his knuckles to a demonstration. This, after all, is but the winter result of gipsy waste labour, and the hands that cannot work or pilfer must ask respectfully beg, with a bow, for a bit of bread, and a courtesy for "ye lady and gentleman."

Our desire has always been to see respectable

homes for our poor and working classes; to see their homes properly constructed and ventilated, with a plentiful supply of pure water and the free air and sun of heaven flushed in upon the walls and floors of the poor man's home. No labour spent by us in this direction will be misapplied or distasteful.

In taking a brief survey of Norwood district it strikes us that the field of building operations has been overrun, not only in the town but in and near the adjacent districts of Forest-hill and Sydenham. A full met naturally intervene for a short while; but it seems certain that all the places enumerated will again rapidly extend themselves in area and population, on account of the situation.

The railway accommodation between London and Norwood is pretty good. Complaints, however, are not unheard on the score of the fares. Reductions are now taking place; and facilities enough exist for sightseers visiting the Crystal Palace from either the West or East end.

WILLIAM ESSEX.

THE arts of enamelling and engraving require so much skill and judgment in their highest applications, that men who have thus successfully applied them have always been accorded artistic honours, and by none were these ever more fully deserved than by the subject of the present memoir, for the art of enamel-painting never attained a higher degree of perfection than at his hands. William Essex was born in London, August 1, 1785. His father was a watch-dial painter and bookseller, in Clerkenwell, and in the former capacity gave that direction to his son's talents which grew to an ambitious desire to extend the application of enamel, and to trace some new means of mastering the art in this imperishable material, so that faithful records of them should be preserved, long after the more fragile oil-colour, canvas, and panel should have succumbed to the injurious hand of time. The book department of his father's business enabled him to gratify his love of reading, and to enrich his mind with poetic and artistic lore, and was also the means of introducing the young aspirant to Flaxman, Brayley, Britton, and others, with whom his father was intimate, and who encouraged his early efforts and remained his steadfast friends.

As a child, William Essex was delicate and sensitive, and this delicate and nervous temperament was his through life. It is not surprising, therefore, that he exhibited a taste and talent for music, playing both violin and flute extremely well; nor that, at one time, music as a profession should have almost shaken his allegiance to painting. As a youth, he had very little formal instruction in art; he was, however, placed for a brief period with a very excellent enamel and glass painter of the name of Maw, but his superior skill was more than his own talent, industry, and perseverance. The technical excellence of his work at the commencement of his career may in a great measure be ascribed to the chemical knowledge of his brother, Mr. Alfred Essex, who prepared the plates, compounded the wonderfully choice colours, and fired the paintings; but his brother's health was very failing, and the whole ones of enamelling, technical as well as artistic, latterly devolved upon him. He had furnished built at the back of his house in Osnaburgh-street, Regent's Park, and henceforward attended to the firing and the entire chemistry of enamelling himself. His earliest enameled portraits were small and delicately-finished portraits of George IV., executed for Messrs. Randall & Bridg, jewellers to his Majesty. These brought him Court notice. He afterwards painted for William IV. and Queen Adelaide, and continued to exhibit from year to year at the Royal Academy and elsewhere. Thus he gradually gained many kind and influential friends and patrons among the nobility, and was introduced by the Duchess of Gordon to paint for the Princess, who, on becoming Queen Victoria, made him her enamel-painter in ordinary.

His portraits of the Queen, his Royal Highness the late Prince Consort, and other members of the Royal family, are very numerous, and he executed very many of the enameled for that regal and interesting historical series of portraits from Henry VII. to the present times which adorn the chambers of Windsor Castle. He also painted many works for Samuel Rogers and received great assistance, kindness, and

attention from the poet. It is in such works as are exhibited in the Plummy Collection at South Kensington that his wonderful skill is most apparent,—in the "Ecoe Homo," "The Cottage Toilet," Puck, Gertrude, the Virgin, &c.—transcript in which the very touch and imparts of the originals are faithfully rendered. Sir David Wilkie was so pleased with the rendering of "The Cottage Toilet" that he painted a picture of Sancho Panza on purpose for our enameller, whose copy of it was purchased by the Duke of Buccleugh. "The Young Lambton," after Lawrence, and "The Strawberry Girl," after Reynolds, also show his consummate mastery of the material. Thus he worked on in this exquisite jewelry of art, his eight holding out in a most wonderful manner, and enabling him to accomplish the most minute work till nearly eighty years of age, then a few years of inevitable decay, his labours not forgotten by the Crown, and his good, talented, peaceful, and laborious life closed in the arms of his children, at Brighton, December 25th, 1869.

His eldest son, of the same name, a young artist full of promise, died some years since.

CONTINENTAL SCHOOLS OF ARCHITECTURE.

THE artistic education of England is allowed on all hands to be insufficient. Many Englishmen have been abroad to investigate the methods of art-training now followed on the Continent. Very few Englishmen have undergone complete training in German and French art-schools; so that the evidence concerning these schools is that of English outsiders, who are as ignorant of the most important facts as the public they purport to enlighten. The evidence we offer is that of an Englishman, a graduate of the Polytechnicum of Zurich, and a medalist of the Ecole des Beaux Arts, Paris.

We shall here sketch the life of a student of architecture in Zurich and Paris.

In Zurich the Polytechnicum course lasts three years. The student qualifies himself for matriculation in the following subjects:—I. Algebra; II. Geometry; III. Descriptive and Analytical Geometry; IV. Natural Philosophy; V. Chemistry.

In the first year he attends lectures on—I. Differential and Integral Calculus; II. Technical Chemistry; III. Construction; IV. Descriptive Geometry; V. History of Art.

The rest of his time is devoted to—I. Drawing pieces of architecture; first from Greek monuments, and then from Italian Renaissance. Le Tacuilly's plates are much used for the purpose. 2. Drawing the nude figure from the cast, four hours a week. 3. Ornament, six hours a week.

In the second year the student attends lectures on—I. Statics and Pressure; II. Construction of Bridges and Bridges.

He fills up his time with—I. Composing Architectural designs; 2. Landscape Painting; 3. Modelling; 4. Drawing ornaments from the cast.

The third year consists of,—I. Sempers's third course on Practical Aesthetics; II. Architectural Designing.

There are monthly and yearly examinations. Thus the student is ever kept alive to his work. If successful in all these examinations, the candidate is entitled to the degree of architect.

In the opinion of many competent judges, the mental discipline of the Polytechnicum is too rigid, and tends to cramp the originality of pupils. Again, the Polytechnicum teaches a great deal more high mathematics than necessary for practical purposes.

Now for the Ecole des Beaux Arts.

The pupil in the Ecole des Beaux Arts is left entirely to his own initiative, and that of private institutions named *ateliers*, where he is taught by his elder comrades, and by a professor, who is generally a "Grand Prix de Rome."

Not unlike the University of London, the Ecole des Beaux Arts is mainly an examining prize-conferring Board. It also appoints a staff of salaried professors, who lecture publicly and gratuitously on all architectural subjects.

The candidate for matriculation in the Ecole des Beaux Arts must submit to a competitive examination open twice a year.

The matriculation subjects are,—I. Drawing from the cast an antique monument, as a tripod or caryatides. Time allowed, eighteen hours. II. Composing a small architectural design, such as the middle pavilion of a town-hall, or a small

law-court (Tribunal de premiere instance). Time allowed, one day.

If approved in the above, the candidate goes on with examinations in:—III. Mathematics; IV. General history of art.

The successful candidate is then named *élève de 2^e Classe de l'Ecole des Beaux Arts*, and works up for his title of *élève de 1^{re} Classe*, which he secures by obtaining,—I. Three honourable mentions in architecture; II. One honourable mention in mathematics; III. One in construction; IV. One in descriptive geometry; V. One in stereotomy; VI. One in perspective; VII. One in drawing from the cast.

The *élève de 1^{re} classe* may then compete for the largest designs, such as public buildings and noblemen's mansions. For these competitions the school offers medals as well as honourable mentions. When the *élève de 1^{re} classe* has obtained twelve honourable mentions, he can compete for the diploma of the Ecole des Beaux Arts, which brings his studies to a close in that school.

No candidate has yet taken less than two years passing from the second class to the first. Few have been less than three years securing the twelve honourable mentions which qualify them for the diploma competition. So, reckoning one year's preparatory studies, a young Frenchman is seven years completing his architectural studies.

The studentship of the "Grand Prix de Rome" is a contest apart from the ordinary business of the school. Every Frenchman under twenty-five years of age is allowed to compete for it.

This competition is divided into three stages. In the first stage a small and easy design—a funeral monument or a public fountain. Time allowed, twelve hours.

The sixty best candidates are chosen by the jury.

In the second stage, the sixty candidates compete for a large design. Last year the subject was a manufactory of carpets, such as the Gobelin. Time allowed, twenty-four hours.

The first ten candidates in the second trial are admitted for the third and final trial, which lasts three months. The candidates, shut up in separate rooms during four days, have to sketch the general outlines of their plans. Copies of these sketches are handed over to the commission of the school. In the three remaining months the candidates have to work out those sketches, without introducing any material changes, and the drawings are to be finished by the candidate himself.

This system of isolation seen in all the competitions of the school stimulates and insures the originality of the candidate.

The training given by the Ecole des Beaux Arts, Paris, is, in our opinion, superior to that of the Zurich Polytechnicum.

One thing, however, is wanting in Paris, and that is, a searching course of lectures on the History of Art, accompanied by competitive examinations in that subject.

"*Arts longa, vite brevis*," is a maxim well understood on the Continent. The English architect strikes us as: *vita brevis; ergo, ars brevior*. To mistake art for a knack which may be picked up in a year or two, is to mistake mind for body.

No wonder that English architectural art is as exuberant as an unweeded garden. Brimful of ideas and conception, the English architect has never learnt how to marshal them; in other words, he creates, but does not compose, using the word in its high sense of harmoniously setting together things that will harmonize. The Continental student learns to tread his way through history, and to give a reason for his every step.

A great architect ought to be a sound historian and mathematician, as well as a fair mathematician. It is hopeless to expect substantial grounding in these departments of human knowledge without long and systematic schooling. Whether parents in England can keep their children in *studium pupillari* as long as on the Continent is a question for political economists, not for artists. The arts are wayward muses, and only yield acquiescence after assiduous wooing. We hail with joy the English art movement, and firmly believe that, with Continental advantages, English students would quickly come to the front and stand unrivalled, thanks to their indomitable energy and sinew.

LAWRENCE HAYN.

Graduate of the Zurich Polytechnicum, and Medalist of the Ecole des Beaux Arts, Paris.

THE "CORPS DES PONTS ET CHAUSSEES."

Mrs. C. VIGNOLES, F.R.S., in the course of his weighty and important address as President of the Institution of Civil Engineers, said,—It was Louis XI. who first established post-houses and relays of horses along certain chief roads. In 1550 the first road guide-book for France was published, describing about 100 routes. In 1556 a regular *chaussée* from Paris to Orleans was made; but for more than a century later the great highways (and for these only had any repairs been hitherto undertaken) were only suited for the rapid transit of horsemen, though wagons or other covered or uncovered vehicles, like the arabs of Eastern countries, or the *tarantulas* of Russia, travelled in good weather over the wild tracks. It was in 1660 that the celebrated statesman Colbert was appointed by Louis XIV. Comptroller-General of Finance, and for many years he exercised powerful and efficient rule over all the ways of communication, employing independent architects and engineers, civil and military (most of whom he appears to have mistrusted, and paid all badly and irregularly). Much of their time and large sums were devoted to keeping passable the chief routes from Paris to the seats of war, for the passage of the Grand Condé to enjoy the triumphs gained for him by his armies.

At the death of Louis XIV., after several abortive attempts, the charge of the internal communications was taken out of the hands of the Fiscal Department, and the decree of the 1st of February, 1716, marked the date of the actual establishment and definite organization of the *Corps des Ponts et Chaussées*, a hierarchy of engineers was then created, which, though the duties first attributed to them have since been vastly extended, still exists in its leading features.

As now constituted, this *Corps des Ponts et Chaussées* forms the most important branch of the Government Department in France, designated as the "Ministry of Agriculture, Commerce, and Public Works." It is impossible, in a brief sketch, such as I am attempting, to give more than a faint idea of the importance and many ramifications of this ministry, which includes the direction, inspection, and in many cases the carrying out of what, in this country, are assigned to various and generally independent bodies, or are not looked after at all, at least systematically.

The engineering branch inspects and controls every railway, canal, and navigable river, whether completed and in operation or only in progress. It brings every mill and manufacturing establishment, worked either by water or by steam, under its direction; mines, sunk or open, beds of minerals, quarries and collieries, come under its regulations, and, of course, all steam engines, stationary or mobile, and also all establishments for electric telegraphs, water, or sewage, and the streets and improvement of towns. A special office is devoted to the management of all the lighthouses, channels, and buoys on the coasts, estuaries, and harbours. The construction and repair of highways and carriageable roads of every class come under its control. Further, it establishes the minute regulations for the preparations, on fixed scales, of every plan and section intended for the purpose of soliciting a concession, and for every stage of the works subsequently executed.

Thus this ministry combines in itself, and becomes, theoretically, responsible for many of the duties performed in this country by the "Standing order" and other committees of both Houses of Parliament, by some department or other of the Board of Trade, the Custom House, the Ordnance Survey Office, the hydrographical branch of the Admiralty, the Trinity Board, the Woods and Forests, the Board of Health, and other public boards and commissioners, by the county, city, and borough surveyors, by the waywardens, and by innumerable local or other authorities in the United Kingdom; besides many other duties and functions which in this country we have had no thought of creating for the purpose of control, but which are vested in this ministry by their perfect system of centralisation.

To keep this enormous machine in good working order the subdivision of labour and responsibility has been carried to an extent which is a striking proof of the organising faculties of the French. There are in Paris about thirty-two bureaux, each with its staff of chief, deputy, and clerks, of which fully one-half have their attention devoted exclusively to public works. So of

tions were commenced. It is a lofty building, of two stories in height above ground, and the arrangements on each floor are identical. We will begin by describing the large south wards, one above the other. These are each 110 ft. in long, 26 ft. wide, and a little over 16 ft. in height, arranged for twenty-four beds, two beds between each window. When fire are not required four beds additional can be placed. Taking the maximum number at twenty-eight beds, there are upwards of 100 square feet of floor area to each patient, and 1,700 cubic feet of air space to each. The large windows on each side are glazed with plate glass, in order to economize warmth, and open as sashes in three divisions, the lower sashes in the ordinary manner, the upper sashes being worked up and down by a hook at the end of a rod. Valves, sliding hit and miss, 3 ft. long, are over each window, worked easily from below. There are also small sliding valves below each window on opposite sides, to cleanse the lower stratum of air when needed. At the ceiling level are Sheringham's movable ventilators, acting in conjunction with foul-air shafts opposite, delivering out above the roofs.

The warming is by two large stores with open grates, of a construction that has been specially devised. They project from the side walls, and form a large hollow space, in order to economize, and entirely within the room. Fresh air is admitted from the outside, is warmed by contact with the firebrick back and sides of the open grates, and delivered through gratings at the top of the stores into the wards. The radi firebrick construction is cased round with a smooth glazed tile, and covered over with a moulded stone. Fresh air is introduced into the stone flanges to supply the fire and increase the draught. Provisions are made by descending shafts for sweeping the smoke-flues in the basement below. The arrangements for lighting are by gas pendants, enclosed in ventilating tubes, terminating in large ground-glass globes, that serve to soften the light. The products of combustion are carried off from the tubes by shafts delivering out above the roofs. At the south end on each floor are glass doors, leading to a loggia below and balcony above, where patients may be wheeled out in their beds, if necessary, for the benefit of the sun and air. Adjacent are the entrances to the bath-rooms, lavatories, sinks, water-closets and other conveniences, screened off from the wards, and separated therefrom by passages, with windows and ventilators on opposite sides, and doors, so as to prevent interchange of air between those places and the wards. On one side of the wards are the bath-rooms, with shower-baths, lavatories, and portable baths on wheels, to bring to the patients' bedside, with provision for filling and emptying, and supplied with hot and cold water. On the other side are the water-closets and slop-sinks, for emptying and getting rid of fecal matter, from the bed-pans, and other liquid waste; also a urinal in the men's department. Dust-shafts are also provided herein, for the floor-sweepings. These places are warmed with hot-water pipes, and have the same arrangements for ventilation and gas lighting as the wards. All the waste and soil pipes, together with the gas pendants, are ventilated by shafts and trunks connected therewith, and deliver out of the high chimneys above. At the entrance of the large wards are the nurses' rooms and the ward sculleries, with small glazed openings between them and the wards, to allow of inspection of the latter at all times. In the ward sculleries are small ranges with ovens, hot hearth, and plate-shelf, for keeping the diet and washing the cloth for airing the ward linen, sinks with hot and cold water laid on, plate-racks over cupboards for crockery, &c. Near at hand are separate shafts for the descent of foul linen and ashes to the basement, ventilated and delivered out above the roof; also a hoist from the basement to the several floors above for coals and food. Here also are the bell and speaking tube arrangements, by means of which the nurse on each floor can communicate by signal and word of mouth with the porter and kitchen servants, comparatively remote in the administrative department.

Northwards of the staircase are wards for special cases, one on each floor; and beyond those a ward of eight beds on each floor, 37 ft. by 20 ft., by 16 ft. 6 in. high, all with the same provisions for warming, ventilating, and gas lighting as have been already described, and having the same arrangements of baths, portable baths, lavatories, water-closets, slop-sinks, with

intercepting passages, as have been described in conjunction with the large wards, but on a smaller scale. The wards for special cases contain 2,800 cubic feet of air space to each patient, and 150 square feet of floor space. The north wards, of eight beds each, contain 1,900 cubic feet of air space to each patient, and 120 square feet of floor space. Altogether the maximum accommodation in the pavilion is for seventy-six beds.

In the roof space above the top floor are the cisterns for the hot and cold water supply, and the ramifications of service piping. Here also are the foul-air shafts from the wards, gas pendants, waste and soil pipes, converge to air-tight trunks before delivering into the outer air above the roof. Trays of charcoal for purifying the foul air before exit are placed in these trunks, in situations easily accessible for replacing. All the water-pipes are lapped with felt, and gas is laid on to all the spaces in the basement and above the roof where they traverse, so that with proper care on the part of the administration, no bursting of pipes from frost ought to ensue.

The contract for the erection of the building, independent of furniture, was £2,800. Extra cellaring under the pavilion, additional buildings in the rear of the old structure for the better accommodation of out-patients and accident cases, a ward after operation, together with considerable extension of the original plan of the wash-house department, owing to the introduction of steam-machinery, not originally contemplated, and the unforeseen extent of repairs required by the old building, bring up the building account to £11,700. The engineering departments, fittings, and furniture, the laying out of the grounds, the purchase of the land on the north side from the overseers, and the enclosure of the site, payment of architect and clerk of works, together with the maintenance of the institution up to the present time, bring up the total expenditure to something between £17,000, and £19,000.

THE CONSECRATION OF CROYDON NEW CHURCH.

THE consecration of Croydon parish church, which has taken place, is regarded as a great event, and rightly so.

We gave an account of the new structure on the 16th of October, in our Church Building News; but we may here subjoin a few additional particulars.

The stained-glass windows are at present free in number, and comprise some specimens of both English and Foreign workmanship, those of the former being decidedly preferable. That in the east, over the communion, is a rich piece of coloring: in the twelve apertures between the stone-work are scenes from the life of our Saviour. This was purchased by special subscription, the principal part of which was collected by Miss Hodgson and the ladies of the congregation. The west window, under the tower, was presented by Mr. R. A. Heath, and is of foreign workmanship. The window in the south chapel is the gift of Mr. C. S. Robinson, Duppa-hill. In the south side of the chancel, over the vestry door, is a memorial window, given by Mr. W. J. Blake, of Duppa-hill. The fifth window, which is in the south side of the church, near the once beautiful monument of Archbishop Sheldon, has also been erected by private liberality.

Most of the historical monuments are for ever destroyed, and suggestions for their restoration have been made. *Those monuments which remain in their mutilated state are, perhaps, best kept as they are, as relics, not only of the greatness whose effigies they bear, but also of the great calamity which disfigured their artistic beauty. At present they are protected from injury by iron railings, and strangers would lose one chief item of interest in the church and its associations if all traces of the former were obliterated.

The new organ is one of Messrs. Hill & Son's. It is placed in and completely fills the north-eastern recess at the side of the chancel, and is worked, as the former one before the fire, by hydraulic power in the basement.

The clock is placed on the second floor of the tower, one story above the dial. It is fixed upon stout oak framing, and enclosed in a large glass case to protect the delicate works from the dust. Messrs. Gillett & Bland, in order to produce as perfect work of its kind as possible, have introduced all their latest improvements. The clock strikes the hours upon the large tenor

bell, of 31½ cwt., with a hammer-head weighing 90 lb., and chimes the quarters on the 2nd, 3rd, 4th, and 7th bells, the same as at the Westminster Palace clock. The time is shown upon three dials, each 8 ft. in diameter, which are fixed in the north, west, and south side of the tower (the walls of which are 6 ft. thick). The figures and minutes are of cast iron, raised and gilded, as is also the ornamental rim round the edge of each dial; and the background is of copper, painted black. The three pairs of hands are of stout copper, with brass backs, to give them extra strength, and, of course, are gilded to correspond with the figures. The hands altogether weigh 140 lb. The machinery for working the hands is below the clock, the centre of the dials being in the ringers' room on the first floor; the hands are driven from the clock by a perpendicular rod, at the top of which is a bevelled wheel, running in gear with another on the clock, and at the bottom of this is another bevel wheel which turns three others, all fixed in the same frame, each having a conical rod, 9 ft. long, which drives the motion-wheels at the back of each dial, and thus moves all the hands simultaneously. Messrs. Gillett & Bland have improved upon their original patent chiming-machine, in the Boston chiming.

Mr. Scott's design, we may say in conclusion, is very similar to that of the one at the Earl's Perpendicular style. The edifice is now lengthened to 123 ft. by 80 ft. wide. The lengthening is in the chancel, which, by the way, is now the property of the churchwardens, having been purchased by them (for the parish) from those who had a prescriptive title to it in the old building. The sum put down for this right is £500.

The works have necessarily been of an extensive character. The contract of Messrs. Dove Brothers, the builders, is upwards of £25,000; Mr. Scott's commission as architect, £1,200; and the total cost is near upon £30,000. The liberality of several of the parishioners, who have supplied various embellishments and appointments, has, however, lightened the cost to the Restoration Committee to a considerable extent.

A work, titled "Croydon Church, Past and Present," by Mr. J. C. Anderson, is being got up in imperial quarto, with illustrations on steel, wood, and photolithography. The price named by Messrs. Sotheran & Co., of the Strand, is 3s. 13s. 6d. The work is printed for subscribers only.

FEVER AND PESTILENCE.

Scarlatina in Dundee.—A meeting of the Dundee Police Commission in committee has been held, for the purpose of considering what steps should be devised for checking the spread of scarlatina in the town. Provost Yasson presided; and present were Messrs. Yasson, members of the town council, and Drs. Pirie and Alexander, medical officers of health. Drs. Christie and MacLagan also attended. The clerk read a letter as to the sanitary measures adopted in Bristol; and the superintendent of police, Mr. D. Mackay, reported the results of an inspection of lodging-houses, &c. A long communication was also sent from the town surveyor's office by Mr. William Mackinnon, the sanitary inspector, on the state of the town, with suggestions. Dr. MacLagan, Dr. Christie, and Dr. Pirie addressed the meeting; and a draft circular and queries to be sent to teachers was read and considered, and amendments suggested upon it. The whole subject having been discussed, the meeting resolved that Dr. Pirie be requested, with the assistance of the other medical gentlemen present, to prepare in the form of a handbill, for circulation among the inhabitants, a memorandum of the measures suggested to be observed by the community to ensure cleanliness and prevent scarlatina. The meeting instructed the sanitary committee to continue their exertions for the purpose of ensuring cleanliness, and securing as far as possible the health of the inhabitants. The medical gentlemen present concurred in stating that the disease was now not only milder in type, but that the number of cases was on the decrease. The sanitary committee, on the 7th inst., having considered the remit to them by the Board, and having heard the medical officer and inspectors, resolved that the following measures be adopted with the view of improving the sanitary condition of the burgh:—The surveyor was instructed to make an inspection of closets and courts within the burgh, and report as to such of

them as require to be paved with flags, or otherwise improved, communicating with the mere dense parts of the town. The inspector of cleansing was instructed to flush with water the closes and courts in the most thickly populated parts of the town, and to spread disinfectants upon them, and Inspector Kinnear was instructed to cause such of these closes and courts as require it to be whitewashed. It was considered advisable that a circular be addressed to the schoolmasters in town, recommending that they prevent the attendance at school of children in whose families fever is known to be.

Pestilence in Calcutta.—The *Times* correspondent, writing from Calcutta on the 14th December, says:—

"While Calcutta is preparing for rejoicing, the pestilence of malarial fever is sweeping up to its native quarter. At present the fever is wasting the municipal towns of Burdwan with its 45,000, and Serampore with its 30,000 inhabitants. The very constables are so prostrated that they cannot make the small mortuary returns. In some villages the whole population has been carried off, or has fled till the landholders cry out to Government to help them, since their rents are gone. Yet the fever is curable, and is not infectious; but the people in the towns are not so fortunate, and are unable to cook or go for the filthy water at their door, or help themselves. Caste prevents them from helping each other. But a special English doctor is wanted to superintend the native apothecaries; and drainage—above all things, drainage. After stating that in some villages near the marshes 40 per cent. of the people have died, and in others 50, Mr. Adley submits estimates showing that the worst parts of the metropolis will be drained at a cost of only 31,000*l.* so as to yield net results of 150,000*l.* a year, and that if the whole country were drained land would be reclaimed to the value of 100,000,000*l.* It is admitted that it is necessary to override the rights of private property, for the landlords will not combine."

PUBLIC ROOMS, SHEERNESS.

PUBLIC ROOMS, and a concert-hall, 100 ft. by 50 ft., have been built in Sheerness, by a limited company, and will be opened, with a dinner, on Wednesday, the 26th. The style of the building is the pseudo-Italian Gothic of the day. Messrs. Jeffrey & Skiller, of Hastings, were the architects, and the cost is stated at about 4,500*l.* Sheerness now possesses a railway terminus, is a hours' journey from the metropolis, and available from all the large Kentish towns and cities. The pier is used at any height of the tide by steam-packets plying daily up and down the Thames and Medway. The population is not less than 18,000.

We agree with those who think it somewhat strange that while English capitalists are actively engaged in developing the attractions and conveniences of various foreign watering places, only available by English visitors of large means, their attention should not have been turned, before now, to a position lying so close to the metropolis, immediately on the water highway of the world's traffic, and thus to be reached by thousands of Englishmen, means preclude indulgence in long and expensive journeys in search of pleasure or health.

NEW ASSIZE COURTS, DURHAM.

THE Durham Assize Courts have undergone complete revision under the direction of Mr. W. Crozier, the county architect, and may be considered new. They appear to have elicited the warm commendation of those who have had to use them. We give a view of the Crown Court, a view in the Central Hall, and plans of the various stories, specifying the offices and rooms.

Entering the building by one of the three large entrance-doors from a raised terrace on the main front, a vestibule is found, 40 ft. by 11 ft., running right and left. Out of this vestibule access is obtained to gentlemen's waiting-rooms, and the chief constable's and county surveyor's offices. Passing on through three glazed double doors, a corridor is entered, 40 ft. by 6 ft. 6 in. wide, running parallel with the vestibule. At the end of this corridor access is gained to the ladies' waiting-room. After passing across this corridor the central hall is found, one of the main features of the new arrangement. The hall is in the centre of a square formed by the two courts, the grand jury-room and the magistrates' meeting-room. On the south side is the main staircase, leading on the first landing to the grand jury-room, waiting-room for grand jury witnesses, and indictment office. Turning to the right and left you second to a balcony extending round the four sides of the hall, and from this access is obtained to the magistrates' meeting-room (formerly the grand jury-room). The hall is 52 ft. by 29 ft., and 30 ft. in height, lighted from the ceiling by three large ceiling-lights, in a deeply-sunk, beam-pannelled,

level ceiling. The floor is laid in panels in granite cement, intersected by borders of Maw & Co.'s encaustic tiles. The main stairs and balcony are both fitted with broad hand-rails, the newels having terminals formed of the sceptre, and the letters V.R., and the crown in relief are on bosses on their sides, the ornaments being relieved in gold. The effect of the polished stone columns, in two heights, surmounted with arches over the main stairs, and the colonnade on the south side of the hall is well marked. The new grand jury-room, grand jury witness's room, and indictment office, are well lighted; and over these, approached by a side staircase, are four spare rooms, which may be used for references, grand jury retiring-room, solicitors' room, or other purposes. Retracing our steps to the foot of the main staircase, and passing under the first landing, we enter a room to be used as a barristers' robing-room, with lavatories, ward-robbers, &c. The judges' retiring-rooms (fitted with necessary conveniences) are to the right and left of the barristers' robing-room. The judges can either enter at the rear of the robing-room, or of the gaol yard, or by the main front entrance.

The courts are entered by three entrances from the central hall;—one for the general public; one for prosecutors, suitors, and witnesses; and the third for professional men. These latter, before entering into the courts, pass through an intermediate room, the entrance to which is from the central hall. The rooms are much the same in appearance and similar in arrangement, except that in the Crown Court the dock is a permanent one, and in the Civil Court temporary; the space so temporarily occupied when used for the trial of prisoners, giving, by a simple arrangement, extra space and seats for the public, who are used as in City Court. The courts are 50 ft. in length, 42 ft. wide, and 30 ft. in height, and are each lighted during the day by two large ceiling-lights, and after dark by large sunlight with eighty-one burners. The ceilings of the courts are pannelled, covered from all sides of the room, and the walls are relieved by large pilasters with imposts, capitals, and arches resting on them, all supporting a cornice from which the corves of the ceiling spring. The architectural features in the vestibule, corridor, hall, and courts have been carried out in the Tuscan order, to correspond with the original design of the exterior of the building.

The fittings to the interior of the courts are in Dantico oak and American ash, with red and yellow pine linings; the woodwork of the old courts having been used as the framing or heart to the new, the whole being stained and varnished. Across the entire south end of each court is the bench (including a lobby at each end) for the judge as an access to the robing-room and the other for the jurors, changing from waiting jurors to the jury-box. The bench has a wooden-pannelled canopy, ceiling, back, and sides; a pediment behind the judge supports the royal arms; the judges are near to each other, and have ready access for consultations when necessary. To the left of the judge, in the Crown Court, the higher box is for the grand jury, and the lower for reporters of the press. To the right of the judge are corresponding boxes for jurors, the higher box for those in waiting, and the lower one for the jury engaged on the trial. The jurors have a separate passage from these boxes to their retiring-rooms, which are neatly furnished and fitted with all necessary conveniences. In front of and below the judge are desks and seats for the officials. The witness is placed in the angle formed by the reporters' box and the bench, and facing the jury. In front of the court officials is a large table, having in it a movable circular disc, so constructed as to be raised at pleasure to enable models to be shown and described. Round the table are the seats for solicitors. Behind the solicitors' seats are three tiers of sliding seats and desks, each slightly elevated one over the other for the use of the barristers. The second row of these tiers is divided by the interposition of the prisoners' desks, which is fitted with seats for the grand officials. The dock has direct access from the male and female prisoners' waiting-rooms, which are built in the prison yard to the rear of the Crown Court. A covered passage, which gives its form to the seats, passes round the dock on the court level, giving access from side to side of the court. The entrance to the prison is from the court level for the governor of the gaol and surrendering prisoners, on to bail, to get into the dock; steps also ascend to the prosecutors' and witnesses' seats, which are behind the passage,

at the back of the dock. Immediately behind the witnesses' seats, and divided from the latter by an iron railing similar to the hall balcony railing, are tiers of seats for the accommodation of the public; these extend backward to the north wall, each tier rising 6 in. one over another. The floors of the courts are covered with kamptulcon, to prevent noise.

With reference to ventilation, fresh air is admitted to each court through an air grating under the raised floor of the north side elevation, and passes along an air course (10 square feet in area) till it reaches the north side of the basement story (which extends under the whole floor of the central hall); it is here met by a water amoviser, which constantly gives out (extending over the whole sectional area of the air course) a mist or spray that washes and cools the air and regulates its hygrometric state, the waste water falling back into a cistern, and being used in the boilers; the air then passes to a fan, 6 ft. in diameter, which is driven by a small steam engine at a rapid rate, and is then forced either through the cold-air chamber or the hot-air chamber, passing partly through one and partly through the other, according to the heat required in the courts, and which is regulated in the court as easily as hot and cold water—one or both—are admitted into a bath. The hot-air chamber is completely filled with hot-water pipes, heated from a low-pressure boiler. The cold-air chamber is merely a passage through the chambers, as may be necessary, then passes into a mixing chamber, and is distributed by brick, flag-covered, air conduits to all parts of the courts. The air is extracted by means of large air flues, constructed in the roof above the ceiling-level, and connected to a shaft 50 ft. in height at the corner of each court; the ventilation is assisted in the shaft by two coils of steam pipes, one at the public gallery, and the other at the ceiling-level; these coils are heated with steam from a steam boiler, the same boiler supplying power for the engine which drives the fans; the outer skin of the two boilers gives off the necessary heat for raising the central hall. The cost of the works will be about 5,000*l.* Mr. C. Turnhill has been clerk of the works, and has carried out the mason work, which was principally in alterations, with daily workmen; and the following tradesmen have been contractors for the different departments of the work:—Joiners and carpenter's work, Geo. Grados, Durham; slaters, R. Bul & Son, Durham; plastering, and cement, and tile flooring, W. R. Wilkinson, Newcastle-on-Tyne; painter and glazier, W. Hodgson, Durham; plumber and gas-fittings, James Laidler, Durham; heating and ventilation, Haden & Sons, Townbridge and Manchester; furnishing, W. Robson, Durham. Other alterations made at different times since the courts were in use seem to show that the ventilation is well under control.

REFERENCES.

Basement Plans.

1. Fresh-air Conduits.
2. Pumps or Amovisers for washing and cleaning Air.
3. Fan-rooms, containing Fans.
4. Engine and Boiler Room containing Engine for driving Fans, hot Water and Steam Boiler.
5. Cold-air Chambers.
6. Hot-air Chambers, containing hot-water Pipes.
7. Air-tight Chambers.
8. Channels for Fresh Air, cold or hot, to Conduits under Courts.

Ground Plan.

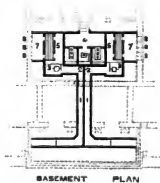
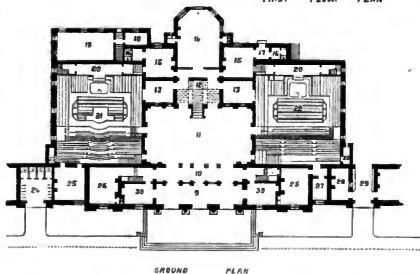
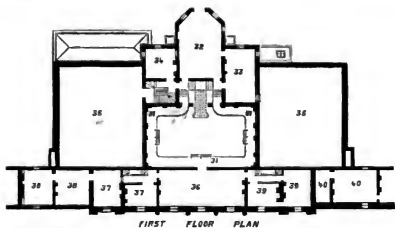
9. Vestibule.
10. Corridor.
11. Central Hall.
12. Main Stairs.
13. Barristers' Lobbies to each Court.
14. Ditto Robbing-room.
15. Judges' Retiring-rooms.
16. Ditto Water-closets and Lavatories.
17. Porch for Judges' private Entrance from Gaol Yard.
18. Female Prisoners' Waiting-rooms.
19. Male Prisoners' Waiting-rooms.
20. Judges' Benches.
21. Crown-court.
22. Civil Court.
23. Extracting Shafts, with Steam Coils at Floor and Ceiling Levels.
24. Fabric Conduits.
25. Jurors' Retiring-rooms.
26. Ladies' Waiting-rooms.
27. Grand Jury's Waiting-rooms.
28. Gaol Porter's Office.
29. Entrance to Gaol.
30. Gentlemen's Waiting-rooms.

First Floor Plan.

31. Balcony round Central Hall.
32. Grand Jury-room.
33. Grand Jury Witnesses' Room.
34. Indictment Office.
35. Upper Part of Courts.
36. Male Prisoners' Waiting-rooms.
37. County Police Offices.
38. Ditto Store.
39. County Barristers' Offices.
40. Gaol Porter's Bed-rooms.

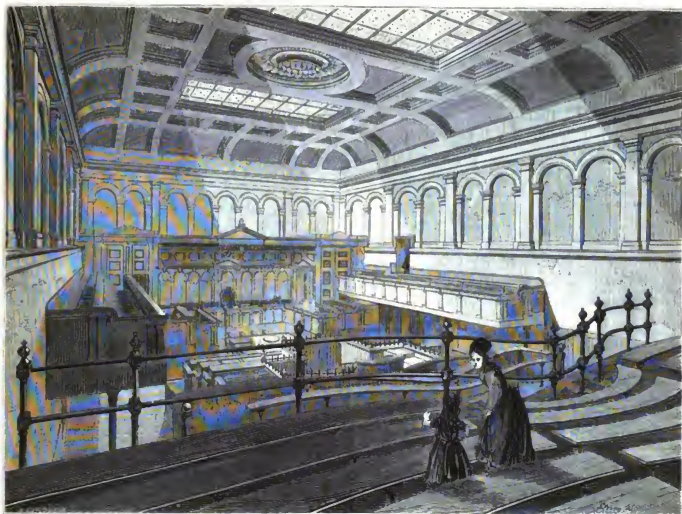


MR. JOSEPH CUBITT, *Joint Engineer of Blackfriars Bridge.*



10 20 30 40 50 60 70
SCALE OF FEET

NEW ASSIZE COURTS,
DURHAM.



Crown Court.



Central Hall.

NEW ASSIZE COURTS, DURHAM.—MR. W. CROZIER, ARCHITECT.

SCHOOLS OF SCIENCE AND ART.

Manchester Academy of Art.—The annual meeting of the members and council of this Academy has been held in the Royal Institution, Mooley - street, Mr. W. K. Keeling, the president, in the chair. The chairman, in opening the proceedings, said they would be glad to hear that the finances of the society were in a more healthy and prosperous condition than in the period since the formation of the academy; that additions had been made to the wardrobe and other properties; and that other costumes were in the course of being made, and that they hoped there would be no longer a necessity of hiring from their London costumer. Some time ago it was suggested that the form of the rules or constitution of the society was somewhat antiquated, and required considerable curtailments and simplification. Amended rules were submitted, and, if approved, would be forwarded at once to Mr. Tidd Pratt for his approval. A subject of more than ordinary importance would probably be brought before the same meeting, viz., the desirableness of admitting ladies as students in the life classes for the draughtsmen. The Honorary Secretary read the council's report for the past year, which stated that in the life classes last season there were eighty-four nights of study, thirty-three of which were devoted to the nude, and the rest to semi-nude and costume or draped models. The academy at the present time consisted of twenty-three members, twelve associates, and thirty students. The Honorary Secretary, in closing his remarks, said it was the intention of the council to hold another *conversations* in the early part of the ensuing year. The limited space of the room for study did not allow of the academy furnishing a collection of books of reference, models, wardrobe, and furniture, as was absolutely necessary for the requirements of an academy of art. The report was adopted, and the meeting terminated. The president, Mr. Bokhlev, honorary secretary, Mr. Robert Crusier, treasurer, and Mr. H. H. Hadfield, literary secretary.

The proposed Gallery of Art for Liverpool.—This subject has been again ventilated a little in the town council; but Mr. Picton did not think the present time a propitious one to argue the question, as he had so often done on previous occasions.

The Nottingham School of Art.—The annual distribution of prizes has been made by Mr. Justice Mellor. There was a large attendance, and on the platform were Lord and Lady Belper, Lady Mellor, Vice-Chancellor James, Mr. Mundella, M.P.; the Mayor, the headmaster (Mr. Rawie), the secretary (Mr. Goodyer), and various others. We have so often noted the good progress which is being made at the Nottingham School, that we need not enter more particularly at present into details; but we may remark that in the annual report of the Governmental examiners, just published, the Nottingham School of Art has received special notice, as follows:—

"We have again to express regret that the study of elementary design, by the filling of geometric forms with ornamental details derived from the analysis of flowers and foliage, has been attempted in but few schools. It may be observed that the Local School of Art of Nottingham has been successful in this direction, and that the same is applied designs. In an extensive competition of good designs for hoes, &c. we found an opportunity for numerous awards, which were called for by the successful designs submitted. Some of the designs were made of the materials for most of the designs for these delicate fabrics. (Signed.) Sir Francis Grant, F.R.A.; J. C. Horsley, R.A.; Edgar Allan Poe, R.A.; J. E. J. Foyate, R.A.; Richard Redgrave, F.R.A.; and Henry Bowser."

The Leicester School of Art.—The committee of this school have unanimously appointed Mr. Wilmot Pilbury, one of the masters of the West London School of Art, as head-master of the school.

Science and Art Classes at Calne.—A preliminary meeting for the purpose of considering the desirability of establishing a Science and Art School has been held at the Institution, Calne. Lord E. Fitzmaurice, M.P., presided; and after considerable discussion it was agreed to start (in the first instance) with night-classes for drawing, and day-classes for such persons as were desirous of receiving instruction in art, but for whom the Government did not make any payment. A subscription list was opened to meet the preliminary expenses, and Mr. Rackmaster was invited to deliver a public address on the industrial advantages of science and art knowledge, and the conditions on which aid was

given by the Department to night-classes established for instruction in science and art. The inaugural meeting has since been held in the Lecture-hall. There was a good attendance of young men. Mr. Backmaster addressed the meeting at considerable length, and a brief discussion followed.

The Stoke and Fenton School of Art.—A public meeting of the friends and supporters of this institution has been held in the Town-hall, Stoke-upon-Trent, under the presidency of Sir C. B. Adderley, M.P. There was not a large attendance. According to the report:—

[illegible]

The Rev. Mr. Lovelace T. Stames, bart., had offered two prizes for the best and second-best designs suitable for earthenware, value 3*l.* and 2*l.* These prizes have not yet been awarded. The treasurer, Mr. M. D. Hollins, offered two prizes for the modelling class. The first prize, of 3*l.*, was awarded to John Henk, for birds modelled from nature; the second prize, 2*l.*, was awarded to Thomas Longmore, for a modelled design for a vase. Prizes were also offered by Mr. Hollins to the same amount. The Department of Science and Art, in order to afford some slight encouragement to exertions on the part of the masters of schools, offered bonuses to the following amount, namely,—one of 50*l.*, three of 40*l.*, five of 30*l.*, ten of 20*l.*, twenty of 10*l.* In 1868, the master received as bonus the sum of 40*l.*, thus ranking the Stoke Newington school second on the list. In 1869, however, the committee regret that the master only received a bonus of 10*l.* The diminution of the bonus they can only attribute to the fact that, early in the year, the committee of the Wedgwood Institute, Burslem, being anxious to get up an exhibition of works of art for the inauguration of that institute, presented to the committee of the Stoke Newington school, the head master (who had some experience in such exhibitions), to assist in getting up this exhibition.

Edinburgh School of Arts.—Sir William Stirling-Maxwell presided at the annual distribution of prizes to students of the Edinburgh School of Arts, and delivered an interesting address on art education. From a report read on the occasion by Mr. Bouverie Primrose, it appeared that the number of students taught in the central school during the year 1868-9, was 184, being an increase of 10 on the year 1867-8. In addition had been 1,361 students taught in various public schools of the city, being 204 more than in the preceding year. Among the prizes distributed were one silver and five bronze medals, out of twenty of the former and fifty of the latter, distributed among 103 Government schools. In the course of his address, on the subject of art education, Sir William Maxwell said,—Look at the state of architecture—that art by which a stranger first measures the artistic taste and the refinement of a country. Edinburgh may point with complacency to the works of our public buildings, the works of Playfair and Bryce. Our western capital has its noble University, now rising in renewed splendour by the Clyde. But glance over to Paris, that great old town which within a few years has been turned into a huge new town, and is now supposed to be the modern Vanity Fair of the world. New Paris, no doubt, can boast of that noble breadth of space and carelessness of cost in which architects of the like, which military despotism in London has been so conspicuously a failure. But Stirling can explain. But when we recover from the bewilderment into which we are thrown by miles of wide boulevards and leagues of moon-

conscious street, and examine the work in detail, I think the result is disappointment. I see no modern building new from the ground which will take rank with the old masterpieces. The great achievements of the Second Empire are the completed Tuilleries and Louvre and the Bois de Boulogne, the Ville, and very notable works of the latter; but, granted that these things are nothing more than a skilful repetition of notes struck out in the sixteenth and seventeenth centuries, in which the ideas of older architects are reproduced, and the H. and L. of the old French sovereigns replaced by the N. of the Corsican. In the chaos of ill-regulated bourgeois life, modern architecture will never be able to do. Some fine private edifices in the City and West-end, always copied from old models, and a few colossal railway-stations, impressive by their vastness, are almost all the modern works we have to show to strangers. In my own time, the only national work that, in my opinion, may be said to have a great success is the bridge over the noble river-walk that now faces the northern bank of the Thames from Westminster to the Temple.

The Dublin School of Art.—The pupils have presented an address, with an accompanying gift, to Mr. R. E. Lyne, the head master, as an expression of their grateful sense of all he has done for their instruction, for the welfare of the school, and for the advancement of art in Ireland. In his reply Mr. Lyne said,—

"The pleasure you have experienced in a pursuit requiring in so high a degree a nice combination of the mental and practical, and so well calculated to develop the finer faculties of the mind and augment intellectual enjoyment, will increase along with a growing power of regarding detail by comprehensive generalisation, and the ability to combine in a greater or less degree, the lessons of nature with the teachings of the æsthetic productions of all ages and countries: by such study only can you hope in the future to indicate the refinements and perfections of the age, or produce works that may testify in favour of our own time."

THE SEWAGE QUESTION.

The Thames Sewage.—The Board of Conservators of the River Thames, it is reported, intend to apply to Parliament next session for power, amongst other things, to prohibit the discharge of solid matter into the River Thames from the sewers and drains of the Metropolitan Board of Works, at Barking and at Crossness, and from any other sewers or drains belonging to them or any other body of persons; and to compel the Metropolitan Board of Works to deodorise or otherwise render innocuous the effluent waters or other liquid matters allowed to flow into the river.

Kidderminster and Leamington.—A few members of the Kidderminster town council have visited the Leamington A B C works, which are now dealing with the sewage of that town. The Messrs have only got twelve months' liberty at present, and are anxious to expedite the construction of machinery of great cost. The distillation is the whole process by which the sewage of a town is restored into its component parts of guano, dried mud, and clear water. A goblet full of the clarified sewage water was quaffed by the visitors. No unpleasant sights or smells, it is said, were observed. One of the visitors informed them that he had dressed 5 acres of land—one with a ton of the native guano (or sewage deposit, after undergoing the A B C process), another with a ton of Frooter & Hyland's manure, and another with 30 tons of stable manure. The guano gave a crop of 18 tons to the acre, the other two only 15 tons. The native guano cost 18s. a ton, but while the cost of the stable manure was 15s., the cost of the native guano was only 8s. 10s., the cost per ton of the guano at the works about a guinea, and it finds a ready market at 8s. 10s. It is hoped that by means of the A B C, or some kindred process, the sewage of the town of Kidderminster may be utilized for the pollution of the river, for some useful purpose. Some gentlemen are sanguine enough to think that the projected water-works and drainage scheme may be rendered unnecessary by these means, and two of the gentlemen connected with the Leamington works have paid Kidderminster a visit to see what the sewage was of their doing and to give by offer to utilize what is at present a curse to the town.

The Pollution of the Trent.—A conference of the local governing bodies of the Potteries, convened by the Mayor of Hanley, has been held at Stoke-upon-Trent, for the purpose of considering the subject of the pollution of the Trent by the towns of Hanley, Burslem, Newcastle, Stoke,

Longton, Tunstall, and Fenton. Mr. Loch, Q.C., M.P., attended on behalf of the Duke of Sutherland, and stated that the condition of the river at Trentham had become perfectly intolerable. After a discussion, Mr. Loch submitted the following heads of a Bill, the expense of preparing which, he said, the Duke of Sutherland would be willing to undertake.

1. Case 1. Prohibit draining into running streams.
2. Constituted board representing all boards of health affected by prohibition.
3. Powers for board to devise means for disposing of sewage by (a) contract with persons or companies, or by (b) purchase of land and erection of works, for denuding, &c.
4. Funds to be provided by the boards of health in proportion to distance from river.
5. Power to boards of health to proceed on rates or extension of their present powers if necessary.
6. Separate penalty clauses for boards of health.

The meeting unanimously adopted the suggestion of Mr. Loch, and resolved to consider the draft Bill at a future meeting.

Sanitary Drainage at South Molton.—In a letter to the *Standard*, Mr. R. Ley, Mayor of South Molton, says:—

"About three weeks ago a paragraph appeared in your paper, stating that a complete system of drainage works had been carried out in South Molton which had proved self-supporting. From that time until now I have been in constant receipt of letters from all parts of the kingdom, containing queries & headed, asking for information on the subject. I have, in fact, been so pestered that it has become quite a troublesome business. I will now, therefore, kindly allow me to state in your columns how we have acted and how far we have succeeded. . . . Our town is situated at the top of a hill, and is surrounded by land in pasture well adapted for irrigation. We spent something over 2,000, in our drainage works, and in tanks for the reception of the sewage. I have sold one lot in perpetuity for irrigation at a distance from the town for 200, per year; another lot for the same purpose, for a term of five years, for 200, per year. The soil from tanks erected for catching the same, for a term of five years, for the sum of 15, 10s. per year. We are about to carry out a water supply in the town, which will doubtless dilute the sewage, and make it more valuable as a manure for pasture land. I have very little doubt but at the end of the year we shall get a larger interest for our outlay, but even at present I think we have nothing to complain of."

THE DARJEN CANAL.

The inauguration of the opening of the Suez Canal, attended with such unusual splendour, magnificence, and cost, and witnessed by the representatives of the nationalities of Europe, having now passed away, and become a matter of history, allow me to observe that I think the Great Britain—one of the first commercial nations of the world—did not figure in a very high or dignified position on that occasion. It is true H.M.'s representative was there, and a few of our distinguished scientific and mercantile men, but we had no high or special representative like many other nations, although it must be known to the whole world that the success of that great work will confer far greater advantages on us than on any other people, in forming a shorter and direct route for shipping to our vast East-Indian possessions.

As our enterprising neighbours have shown us the way for a shorter route to the East, I was curious to see whether we should follow again in the wake in the canalisation of another isthmus, that of Darien, and I find they are again in the field with a project for that purpose; and the President of the United States, in his last address to Congress, made some allusion to it, although the Americans cannot now so much require it, since the opening of the railway from New York to San Francisco. The canalisation of the Isthmus of Darien has always been a favoured project of the Emperor Napoleon III., who has had lines, more than once, surveyed; but it has also been surveyed by other parties, and its expense estimated at about four millions sterling, or less than one third of the present cost of the Suez Canal.

There are several routes proposed for the canal across the Isthmus at Tehuantepec, Nicaragua, and through the Lakes, Chiriqui Lagoon, and Rio David; the Gulf of Darien, Caledonia Bay, to San Miguel, a distance of only 48 miles (mentioned in the *Bulletin*, p. 55, *ante*), and the Rio Atrato, over the Isthmus of Panama, passed from sea to sea, and a favourite line of Baron Humboldt's; but I do not think the surveys have been made with that care and accuracy to enable any party to compare their relative merits and advantages, to select the best and cheapest route, and therefore new and comprehensive surveys are required.

In addition to forming a better and nearer route to our western colonies, the Pacific, Japan, China, &c., the line of canal would open up the coast of Central America, through which it would pass, afford ample room and verge enough for unlimited emigration to a thinly populated

country possessing one of the finest climates in the world and a most productive soil, that will support the wants of man with little labour, and thus spread the blessings of commerce and civilisation westerly as the Suez Canal does towards the east.

Allow me to add, that it behoves the engineers of this country to look better after their interests and their laurels. Are not the leading great undertakings of the world falling into foreign hands? And our own Government are calling in Americans to carry out the Indian railways, and they have actually already employed an American engineer in one of our colonies; this, too, at a time when there is a dearth of employment at home, and even the colonies are civilisation, who have administered largely to the accumulation of wealth in this and other countries, are allowed to miserably decay, and capital is now lavishly embarked and frittered away in petty and unsubstantial telegraph schemes, or foreign (anti-British) loans.

B. BAYLIS.

THE STATE OF THE MARKET-HALL, CHESTER.

FROM the minutes of the Corporate Estate Committee, the town-clerk, at a recent meeting of the council, read that Messrs. Johnson and Ellington, engineers, and the careful examination of the market-hall roof, and in the opinion the breakages resulted from the following causes:—

1. The want of diagonal struts in the roof, which allowed the principals to move laterally, thus disturbing the glass and the ridge pieces, and rendering the struts and the ridge pieces of the skylight. 3. The too great width of the glass in proportion to the strength of the sash. 4. The want of more or else stronger clips at the bottom of the squares of glass, which had given way, sliding downwards from the raised ridge piece. 5. The slating also wanted attention, and there are a good many loose slates. The woodwork of the louvre also wanted painting badly. 6. A quantity of dirt in the lower gutters, which, if not periodically cleared out, would get into the beams which formed the down-spouts.

Messrs. Johnson and Ellington said they calculated the cost of the alterations and additions to the market-hall roof at 515*l*. In this estimate they had not added anything for the risk of breaking in cutting the squares of glass, but that with care they believed would be small. They also had not taken the slating and painting into consideration, with the exception of painting the whole of the new ironwork and the old sash-bars. Surveys were approved at the sum required to repair a building only five years old. After some discussion, it was resolved to refer the matter back to the committee, with instructions to communicate with the architect. Alderman French said that though they might get the opinion of the architect, they could not attach any blame to him.

THE PHANTOM OF THE SEWER.

In your first impression for the new year, Mr. Elliott has given us much sound advice on the ventilation of sewers, which, if carried out, would, ere the close of the year, drive many of our medical men into the Bankruptcy Court. But while we admit that our poisoned houses kill their thousands, let us not forget that our poisoned streets swell still more the undertakers' gains. There is a phenomenon occasionally produced in our streets, which (while the causes are allowed to exist) I would more often apparent. I allude to the steam which any one may sometimes see, especially in November, issuing from many of our street gullies. What is this steam? What does it consist of, and whither does it go? It is nothing less than relapsing and other fevers, in vapoury form, seldom seen because the state of the atmosphere rarely is favourable to its appearance, but still always hovering about us. If it were to be seen every day, slier pests than mine would, ere this, be upon us. We should have stopped the evil; but it is not so; this phantom fever rises and falls (though not unmet) among us, spreading infection, disease, and death. There is little doubt whence it comes. Direct from our sewers and drains this concentrated essence of disease arises, polluting the air with its poison, and freely entering the lungs and blood of its victims. The cause of this is not best kept in the most serious difficulties. We have only by a suitable system of exhaust to turn the almost general draught from our traps and gullies into a steady down-draught into them, and the gases generated in both our sewers and streets, so

antagonistic to health, and so obnoxious to our nasal organisation, might be brought entirely under control, and if possible be utilised, but certainly destroyed. This project I believe to be very old; but, for the welfare of the public, I ask you again to bring it under their notice.

W. F. C.

THE WESTMINSTER STATUE AT CHESTER.

SOME months ago, as we mentioned, it was reported that a defect had been discovered in the statue, by Thorneycroft, of the Marquis of Westminster, which occupies a prominent position in the Grosvenor Park, Chester, and which was pronounced at the time of its inauguration the largest marble statue, from one block, in the kingdom. It seems from what transpired at a recent meeting of the Chester Town Council, that with the exception of a piece which had been let in to the left shoulder of the figure, the statue is out of a solid block of Sicilian marble. The late frost had rendered this piece distinctly visible, and very much marred the sculptor's workmanship. Mr. Thorneycroft has explained that the insertion of the piece in the left shoulder was occasioned by the discovery of a flaw when the block was being worked; that such an insertion was common, and that he was engaged on several statues for the Prince Alfred memorial which would have to be completed in the same way. Considering that the block was excellent, with this exception, he thought it would not be judicious to obtain another block from the quarry, which his contract with the merchant would have permitted him to have done without additional cost. The council proceeded with the work, especially as the committee urged him to get it finished during his lordship's lifetime. An arrangement has been come to between the committee of the subscribers and Mr. Thorneycroft for the latter to make good any damage arising from the insertion of the piece in the shoulder. One or two of the members of the council expressed the disappointment which was felt by the public at learning that the statue was not, after all, as they had been led to believe, out of a single solid block of marble.

The present Lord Westminster, in a letter, admitted there was a difficulty, but said none of the other Greek and Roman gods had large blocks two thousand years ago, and perhaps in a thousand years hence we might be able to do the same. He did not consider the flaw so slight a matter as was endeavoured to be shown.

"THE FLEET."

In answer to your correspondent "Camden," the "Fleet Ditch," or rather let us call it by its true name, the "Holebourne," is carried beneath the Regent's Canal a little to the east of Camden-road, between it and Camden-road. The Highgate branch has its main sources by Kenwood, forming the five large ponds in that locality. The rillet from the vicinity of the cemetery is very unimportant.

J. G. WALKER.

THE TREATMENT OF SEWAGE WITH CARBON.

SIR,—As the sewage question very properly occupies a prominent place in your columns, may I be allowed to call attention to a very simple process, which for several months past has been in operation in this district (Newcastle).

Being carefully watched the working of this plant for nearly three months, and tested the results in various ways, I am sanguine enough to believe that it will prove very valuable. It is the subject of letters patent, and proceeds mainly on the well-known properties of charcoal. Coarse carbons in the shape of coke or waste cinders are so disposed as to form a preliminary tank into which all solid matter contained in the sewage, the effluent water from which is conveyed through a series of smaller tanks charged with finer carbons; the last of the series containing chiefly vegetable or animal charcoal, or a mixture of both. All the tanks are closely covered in, and the contents of the smaller tanks are so timed to empty into the next tank, so that the tank until the same is full; which, after being drained off, may be emptied, and the contents carted away as a valuable manure. I have been present this week during the emptying process, and can testify that so completely has this carbon done

its work, that not the slightest nuisance has been created.

As regards the value of the manure, I may mention that it was carefully tested this last summer in the growth of swedes, canillifers, &c., side by side with the best Peruvian guano, with results which surprised every one. The crop yielded at least 20 per cent. more weight than from the guano.

The plan is now in operation at the Stoke Park Works, and the guardians of the said parish, after prolonged and careful testing of the plan, have shown their confidence in the same by entering into a thirteen years' contract with the patentee.

E. JOHNSON.

ST. MARY'S CHURCH, MISTLEY, ESSEX.

The old parish church of Mistley, in the Italian style, with a tower at each end, having been found to be in a dilapidated condition, involving the necessity of reconstruction, the Rev. C. J. Norman, of Mistley-place, gave a site in the park on the new road recently opened by him from Mistley to Manningtree, and a new church was commenced in December 1869. It is in the Early Decorated style, and has a total length inside of 100 ft. 6 in., of which the chancel occupies 27 ft. 6 in., and a total width, including the nave and the north and north aisles, of 51 ft. 6 in.

At the north-west angle stands the tower, vaulted inside with stone ribs and groined ceiling, forming the principal entrance. The chancel and organ-chamber are both terminated with a semicircular apse, and the former is pierced with seven windows, three of which are filled with stained glass.

The church is constructed with Kentish rag-stone, and the Bath stone dressings of the roof are slated; those over the nave and aisles are open timber-work, while the chancel has a panelled ceiling, divided with arched ribs, springing from carved stone caps and Parbeck marble shafts. The chancel arch is ornamented with carved stone corbels and Lisard supports, and the columns which support the arches for the clerestory rest are of Mansfield red stone. The body of the church is seated with open benches, the passages between the sittings being paved with Burslem tiles, and the chancel with Mow's encaustic tiles. The structure is heated throughout with hot-water pipes, fitted by Messrs. Denton & Co., of Walthamstow. The stone pulpit was the gift of Mr. Munro, of Manningtree, and the font was presented by Mrs. Norman.

Accommodation is provided for 540 adults and 60 children, 500 of the sittings being free. Messrs. Wadmore & Baker, of London, are the architects; and Mr. Hawkins, of Monkleigh, is the organ-builder. The cost of the church, including for the materials of the old church, is £3,971; and for the completion of the spire, 790*l*. The latter feature will have a total height of 132 ft.

DERIVATION OF THE WORD IRELAND.

KING ALFRED's word, *Ira-land*, being a translation, carries us back to Greece and Rome for our derivation of the word "Ireland." Onomatopoeia, an early Greek writer, who copies, with respect to the fabulous Orpheus, the same position that Mæcenas occupies with respect to the mythical Demetrius, has the word *Ilypion*, a word which he says was the name of the island of Greece for the western islands of the blessed. This was Latinized as *Irne*, and appears so in Claudian: unquestionably applied to Ireland.

The Greek root *lypo* means "holy," as in hieratic, &c.; it is identical with the Hebrew, and has also formed the Latin *ira*, whence our words "ire," "irish," &c. — "wreath of ire," however, all suppose that Ireland was really the "blessed or sacred isle" at any time; but Homer and other early poets always fabled the existence of such a place, longed to discover it, and located it just outside the boundary of real knowledge. Thus early Mediterranean voyagers, misled by tales of the "wreath of ire," and previous knowledge by means of more extended excursions, failing to reach the reality, but still pursuing the ideal, ended lastly at Ireland; that place, as latest inheritor of the name, has retained it longest. The native Irish word is "Eire" or "Eirinn"; apparently without any definite etymology, except that *ir* is "west"; but that is not the word.

To the Welsh, Ireland is "Gwerdon," or "Iwerdon" (green island) = a more poetical

term; and the Irish are "gwydyll" — savages. This last term must be deemed an expressive, indicating national animosity; and the English are the hated *Seinweg*, or *Sassanach*, to both races.

A. H.

DRAINS AND CESSPOOLS, CARRY-STREET.

Sir,—In the matter of the Law Courts site, may I suggest one cause for complaint on the part of its surrounding inhabitants, and which, I believe, is the creator of a deal of the fever and illness that have prevailed, and still exist, round that spot?

Beneath the present waste ground are drains and sewers innumerable, which, from the mass of people that lived over them (of the poorest kind), has the incrustation of years and years of use; and, I have not a doubt, the soil surrounding the said drains in many places is like a cesspool. We all know the effect of opening disused cesspools, in regard to the danger that arises to health, and taking into consideration that the air is continually flowing through the sewers and drains, absorbing the fœtid and putrid matter, and thence percolating into the surrounding houses, there, in my belief, is the cause of fever and death. The whole of last summer the stench round this spot was a caution. I had my own family stricken with fever, and in this street there have been several severe cases of the same. If this takes place amongst wealthy people, how must it fare with the poor that inhabit Maiden-lane and other thoroughfares and courts adjoining?

E. LEEDS.

BYHAM ABBEY.

On Thursday, the 13th inst., the first stone of a new mansion was laid at Byham Abbey, near to Tunbridge Wells, by the Marchioness Camden. The workmen, to the number of eighty, were afterwards given a half-day's holiday, and were treated by the Marquis Camden to a supper, under the chairmanship of Mr. French, the clerk of the works, and Messrs. Trollope & Sons' foreman.

The building, designed by Mr. David Brandon, will be completed in about two years. A detached chapel will also be erected in the park, between the ruins of the abbey and the site of the new mansion. These ruins, which are of Early English period, and of much interest, have been two days in the week, and are visited by many persons from Tunbridge Wells and the neighbourhood, the distance from the wells being a pleasant drive or walk of five miles.

CASES UNDER METROPOLITAN BUILDING ACT.

District Surveyor of St. James's v. St. John's v. St. George's.

Sir,—As you have allowed the supplementary statement made by the District Surveyor of St. James's to appear in your columns, we trust, with your usual impartiality, you will allow us a few words on the same subject; as, although generally, and in most of the important particulars, I agree with your former report and with the facts of the case, there are some remarks which we cannot allow to go unchallenged.

In the first place, we are described as "tradesmen expressly refusing to be sub-contractors;" and further on, as "absolutely declining, for private reasons, to surrender our independence;" the real facts of the case being that we were not asked to be sub-contractors; but, as the case generally, we were simply ordered by the architect to erect the building, and we were not asked to be sub-builders, who were ordered to cut away and trim the joints, flooring, and other woodwork, and to make good the same.

The report says that on Mr. Knox dismissing the summons, our counsel, Mr. Warner Sligh, applied for costs. This was not so. Mr. Knox simply said the summons must be dismissed, but without costs, and Mr. Warner Sligh immediately expressed our satisfaction with the decision.

It is quite true costs were asked for, but it was before the case had commenced; and under three circumstances. Mr. Warner Sligh thought it right to inform the magistrate that the case was one of some importance, and that in the event of his giving an adverse decision his clients had instructed him to ask for a case for appeal. After hearing this, the District Surveyor said he would withdraw the summons for the penalty, and remission as regards the fees only; three better not appear against the magistrate's decision as regards fees. Mr. Warner Sligh then said, as his clients and himself were not asked to be sub-builders, he thought it only just to ask, in the event of the summons being withdrawn, their costs should be allowed. Mr. Knox intimated he should not allow them; and that moreover, although there was no appeal against his decision as regards fees, he could, and certainly should if asked to do so, state a case on the point of law which governed his decision, to be argued before the judges.

In the circumstances, the District Surveyor agreed to go on with the case, which ended by Mr. Knox dismissing the summons.

The "supplementary statement" left on the mind of the District Surveyor as set forth in the note at the end of the

statement. It says that the intention, *i.e.*, the sub-builder, has come into the altogether since the date of the Act, and that the clause which is supposed to apply (as to pipes for conveying heated air) "was really directed at nothing of the kind."

We fixed the first sub-builder ever seen in London at the Reform Club, in September, 1868, under the direction of Sir Charles Barry, and many others were fixed in the same year.

The Building Act bears date 1865, and the clause which is supposed to apply states—"No pipe conveying smoke, or other products of combustion, shall be fixed nearer than 18 in. to any inhabited room."

If the District Surveyor thinks this clause was not directed at sub-builders, where is his authority for any interference at all?

SLIGH & CO.

District Surveyor of Whitechapel v. Holland & Hannan.

THIS was a summons taken out, at the Thames Police-court, by the District Surveyor of Whitechapel against Messrs. Holland & Hannan, builders, for erecting a warehouse in Leman-street, Whitechapel, contrary to the provisions of rule 9, section 27, of the Building Act.

Mr. Reginald Ward, Assistant Solicitor to the Metropolitan Board of Works, appeared to support the summons. Mr. Benjamin Sligh appeared as counsel for the defendants.

The facts of the case were that Messrs. Holland & Hannan had erected extensive warehouses in Leman-street, which were divided by the basement by the Building Act, so as to contain three compartments, each of them somewhat less than 21,000 cubic feet. The basement running under the warehouses contained 20,000 cubic feet, was divided from the upper floors by horizontal erections on iron girders, and had no communication therewith, the only access to the basement being from the exterior of the building.

Mr. Ward argued that, having regard to the definition of the words "party wall" given in section 17 of the Act, the basement was not divided from the upper floors, as required by the 4th rule, and its contents would therefore, have to be added to the contents of the upper floors, so that each would contain considerably in excess of 21,000 cubic feet. It was further argued that rule 3 of the 27th section would be infringed, as the contents of rule 4, but that it applied more particularly to buildings erected otherwise than as warehouses, &c., for instance, in model lodging-houses and chambers, with separate entrances.

Mr. Benjamin Sligh argued that in calculating the cubic contents of each division of the building, the basement should be excluded, the division between it and the upper floor being complete. Counsel also argued that the case fell under rule 1, and as the basement had a separate entrance from without, it was a building separated as required by section 27.

The Magistrate, Mr. Lushington, decided that the basement was not divided by a party wall, and must, therefore, with the upper floors, be included in the calculation. In ascertaining the contents of the building, he considered part of each set of warehouses alone. The Magistrate also decided that rule 3 did not exempt the defendants from the provisions of the Building Act, and therefore made upon the defendants to divide the building by party walls in such manner that the contents of each division should not exceed 21,000 cubic feet.

NEW BRITISH INSTITUTION.

THREE appears to have been a split amongst the artists who opened the first exhibition in Bond-street. So now, instead of one, two societies are to be formed. This is greatly to be regretted, and should have avoided if the artists, as we comprehend them, will have to yield ultimately, and it may as well be done first as last. Two cannot flourish; one may and should. The title "New British Institution" is wisely adopted by those who have engaged the Gallery at 39, Old Bond-street, seven doors from Piccadilly, and they propose the following rules:—

1. An acting committee of selection and arrangement will be elected by the artists proposing contributions from a list of candidates to be forwarded by letter.
2. The claims of every contributor's work will be decided on the ground of merit alone. No rights or privileges in the exhibition can therefore be allowed to members of the committee, guarantors, or others.
3. No more than two works by any contributor will be placed, and no greater number will be received.
4. A financial committee will have control over expenditure and receipts.

A guarantee fund is being raised, and a strong list of supporters is published. Mr. Gullick acts as honorary secretary.

ABOUT CAMEOS.

THE name of Bononi is known in part of the art world, and his works have been admired and praised by some of the best judges in England a few years ago, and he obtained prizes and gold medals from the Society of Arts, for a cameo of the Queen and Prince Consort, and was mentioned in terms of high commendation in the *Art-Journal*, of September, 1866. Her Majesty also expressed her approval of his work, and gave him an order, which was very gratifying to him. Yet, M. Bononi never has obtained private recognition from the public being aware that we have among us an artist in cameo of superior merit. His designs and workmanship are excellent, and I feel sure that, could his name be brought more prominently before the world, he

would obtain many patrons. By kindly giving this little notice a place in your widely circulated journal, you will confer a great favour, and do more to promote the desired end than any other means that could be suggested. M. Ronca resides at 42, Blansy-street, West Chelsea, and a visit to him would repay any art-lover for the trouble. It is surely a mistake to allow such a man to struggle through the best years of his life in obscurity, and only to find out his merits when the finger of fashion may point the way; when his hand may have lost its cunning; and so late as the artist is concerned, it may be "too late."

K. S. P.

ARCHITECTURAL ART CLASSES.

The arrangements for establishing drawing, colouring, and modelling classes for architectural students are making progress. A joint committee of the Royal Institute of British Architects, the Architectural Association, and the Architectural Museum, have held meetings, and the outlines of a scheme have been prepared and discussed. The classes will meet in the Architectural Museum, and have the advantage of the collection there. Such of our readers as may be disposed to join the classes, would do well by at once sending their names to the Museum, as willing to look to the terms when published.

THE LIFE-LINE FOR FIRES.

Sir,—I would beg to ask, through the medium of your journal, whether the life-line rocket apparatus, now in use for saving lives from shipwreck, might not be equally applicable to the rescue of lives from fire?

It appears to me that a portable apparatus of the kind, which would practically be able to convey a line to any height of story or roof that could possibly be required, might, in the absence of fire engines, or, as is more frequently the case, of water and fire-escapes or ladders, be the means of preserving many lives now lamentably lost?

ALFRED JOWES.

BATTENING IN SHEFFIELD STILL.

The villainous scoundrels who disgrace, not only Sheffield, but all England, are still at their nefarious work. Several houses have of late been attacked and the contents destroyed. In one instance, the assailants attacked the wrong house, and did not discover their mistake until they had broken up every thing within their power. As soon as a man omits to make his payments to the trade secretary he is rattened. A young man in the employment of Messrs. Sorby has had a not stolen, to prevent him from working, because, having spent the whole of his ready-money during the week of his honeymoon, he was not able to pay his "raty," and another man, working for the same firm, has been threatened with rattening because he engaged one of his five children to help him at his trade without having first obtained permission of the union. To be secretary to such a union ought itself to be punishable. The cat would be the best rooster out of these rats, could she only get at them to claw their backs well. Every honest English workman should raise his voice against them.

SIZE OF MORTAR JOINTS IN BRICKWORK.

Will you allow me to ask the following questions through your columns?

1. What is the best thickness for the mortar joints in brickwork?
2. What are the distinctive qualities of thick and thin joints respectively?

Mr. Street read a paper at the Institute a few weeks ago, of which a summary appears at page 99 of your last volume. With reference to Medieval brick architecture, it appeared in various districts, that gentlemen are reported to have said:—

"The development of each was different. . . . But they, it seemed, all agreed that brickwork is to be strong it must be built with an enormous quantity of mortar; and so, instead of specifying, as enlightened nineteenth-century architects do, that 'no mortar joint is to be more than 1 in. thick,' they thought, if we could find a Medieval specification, we should find that in this form, 'No mortar joint is to be less than 1 in. thick.'"

We might, perhaps, expect Mr. Street's dictum as to what is good brickwork without hesitation, if it only ran counter to the practice of those "enlightened nineteenth-century architects" who

were thus set down so summarily by one of their own number; but engineers very generally appeared to know something of good building at least, and Professor Rankine is the latest authority in the engineering world. What, then, are we to think of abstracts such as this, which is from Rankine's "Civil Engineering," p. 393?

"The following principles are to be observed in building with mortar, taking care, at the same time, that the thickness of mortar shall not exceed about 1 in."

In order to prevent the use of too great a thickness of mortar, it is usual in specifications to prescribe a certain depth which a certain number of courses of brickwork shall not exceed."

The question at issue is of considerable importance, and, if it involves the relative merit of Medieval and modern brickwork, is also of some interest. I therefore hope that some of your correspondents may throw further light on the matter.

W. W. R.

* * * The question was treated of in the *Builder* long ago, with some strong opinions in favour of large mortar joints: it may be usefully re-opened.

COMPETITIONS.

New Infirmary, Rastry, Kent.—The Guardians of the Rastry Union in November last invited a competition to prepare plans for a new infirmary, capable of accommodating 100 patients, to be built on a portion of the present workhouse grounds. The designs of Mr. T. E. Knightley, of Cannon-street, City, were selected by the Guardians on the 12th inst. The drawings are now before the Poor Law Board for their approval.

Pyramouth Guildhall.—At a meeting of the town council, on the 12th, a letter was read from Mr. C. F. Hayward, to whom the second premium was awarded, arguing, on the ground of admissions made by the referee, that his design should be carried out instead of that of Messrs. Erman & Line. The council then proceeded to consider the general question, the proposal to erect a new guildhall. After a very long discussion, it was resolved:—"That the council do proceed to carry into execution the erection of a new guildhall, and that a committee be appointed, with the necessary powers to give effect to this resolution, subject to the further approval of the council." This settles the question to the committee as to the plans, the mode, and the time, subject to the approval of the council.

RE-OPENING OF HOLY TRINITY CHURCH, GUILDFORD.

The church of the Holy Trinity, Guildford, has been re-opened for divine service, having in that time undergone much internal alteration, improvement, and embellishment. Since the opening of the church in 1763, nothing, except perhaps a little painting and varnishing, has been done to the building; and, of course, in so long a period the place had got dirty and out of order. The galleries, too, were inconvenient, and the pews unsightly and much too high. Measures were taken to obtain the necessary funds for carrying out the object sought. Designs were submitted by Mr. Woodyer, of Grafton, architect; these were approved, and the church was closed for the work of restoration to commence in the spring of 1869.

The old galleries on the north and south have been removed, the whole of the windows have been altered, and glazed with slightly tinted glass arranged in geometrical pattern. The pews have been lowered 6 in., and revarnished. The organ has been removed from the gallery and placed in the north aisle close to the choir. It has been reconstructed by Messrs. Bevington & Son, of Soho. The chancel portion of the church has undergone a renovation. The arch is ornamented with an artistic bordering in ecclesiastical design, with beaded colours, by Mr. Gray, of London; while the walls are painted deep blue, with stars of gold. The panels of the chancel recess were also decorated by the same gentleman. Each panel bears in its centre a double triangle, surmounted by a cross, gilded and shadowed, the edges of the panels being similarly coloured. The chancel and aisles are paved with glazed tiles, after the design of Mr. Woodyer, which, in the aisles being of the geometrical pattern. The communion recess is enclosed with a light railing of blue and gold, with a crimson velvet rim. Two new windows have been added on each side of the great window in the chancel; and the choir stall has been

placed outside the communion recess near the organ. The reading-desk, pulpit, and clerk's desk have both been lowered. "Old Weston's" Chapel, which was nothing but a mortuary, has, with the consent of the owners, been floored and converted into a vestry. The two old chandeliers, which were formerly used for lighting the church, have been converted into gasoliers which add an improved light. The eastern gallery has been re-seated, and contains 150 free sittings, thus making the building capable of containing 650 persons. The whole of the works have been executed by Mr. William Pimm, of Guildford, under the direction of Mr. Woodyer, architect.

CHURCH-BUILDING NEWS.

Canston (Notts.).—St. Andrew's Church, Canston, has been restored and re-opened. The church is situated in the centre of the village. The edifice consists of nave, chancel, north and south aisles, and a small chancel aisle of somewhat ancient appearance. The edifice is described as having been in a deplorable condition before the present restoration. It was filled with old pews; there was a gallery at the east end; the roofs were flat; and the whole sadly needed the hand of the restorer. The chancel was built entirely of new stone, and the Ecclesiastical Commissioners. The north wall has also been considerably altered and strengthened. The interior walls have been scraped and renovated, the belfry arch brought out to view; the old pews have been replaced by new and open deal seats—the old-fashioned pulpit and reading-desk replaced by a new lectern and pulpit. Inside the communion-rails encaustic tiles have been laid, and the altar is a new one. Accommodation is provided for above 300 persons. It is intended, we believe, to make the seats free and unappropriated, and to depend on the offertory for support. The architect of the work was Messrs. Christian, of London; and the builder Mr. Cliphams, of this place. The cost of the restoration will be about £2,000.

Toller (Wolme).—In the hamlet of Toller Wolme has just been opened a new church, constructed at the sole expense of Mr. William Pope. He has endowed as well as erected it for the benefit of the labourers in his employ. St. John the Baptist is the name of the new church, near the residence of Mr. Pope. It has nave and chancel, with a vestry on the north side, and a tower at the south-west corner. Its dimensions, excluding the tower, are 50 ft. by 20 ft. Local stone has been used in its construction, and there are Ham-hill stone dressings. Crosses of Ham stone mark the entrance to the church. The nave in the nave have foliated headings. The east window has three lights, and the west window has two, with foliated headings. The porch is lighted by means of a couple of small lancet windows with stained-glass borders. In the nave are open benches of stained deal. The chancel is paved with encaustic tiles. The altar, constructed of oak, and separated by oak rails, is the gift of the Corcombe parishioners. On the stained-glass east window is represented "The Crucifixion." Surmounting it is a foliated circle, within which is the figure of an angel, with a "crown of glory." Of angels bearing scrolls there are representations in two other circles. A representation of Christ and the cross appears in the centre, and there are figures on each side, and weeping angels above. The nave has an open stained deal roof, the plans for which were prepared by Mr. Warr, formerly of Corcombe. Mr. W. Holland, Warwick, supplied the east and nave windows; Messrs. Cox & Son, of London, the west window. There is but one bell in the tower; and Mr. Pope hopes to see the belfry furnished with a peal. Mr. R. Chedd, of Rappaham, did the masonry, and Mr. Sanders, of Beaminster, the carpentering; Mr. Chick, of Beaminster, constructing the pulpit. The entire work has gone on under the personal superintendence of Mr. Pope.

Silth (Dorset).—The parish church of St. Nicholas has been re-opened, after having undergone a restoration and repair. As it now stands, the church is without any enlargement, which is unnecessary. All the original architecture has been reproduced. The open oak roofs, with their carved bosses, have been examined from their plaster and gilded principals, and the gables have been divested of their whitewash coats, and the whole restored. The pews have been superseded by open benches of oak, and the floors repaved. The chancel divided from the nave by an arch whose span opens to view the east window. There is a

ascending to the chancel, and another at the far-rials, whilst around the communion-table is footpace, so that the ascent from the nave to the altar places it within view of all the congregation. The floor of the chancel has been laid with tiles, supplied by Mr. Godwin, of Logwarrine, who also supplied the plain red tiles with which the floors of the nave and aisle are paved.

Improvement to this part of the church was the removal of the massive monument to Judge Wyndham, which formerly occupied the south end of the chancel. By the removal of this old window was found in the south wall, which has been restored and filled with stained glass. In the corner was also discovered an old sedilia and a piscina with credence-table, whilst a hagioscope, looking into the south aisle, has also been found, and the obstruction removed. The additional light thus obtained, as well as the finding of old features of interest, have resulted in the labour and expense of removing the monument. On the north side of the chancel is a chantry, which contains a fan-traceried roof, and this has been reproduced after the original style. This apartment, which is used as a vestry, is lighted from the chancel by a Perpendicular window with four compartments, filled with figures of St. Timothy, Barnabas, and Luke, in very old stained glass. In the corner of the chantry is a piscina and credence table, somewhat similar (though not so large) to those in the chancel. The old stalls in the chancel have been removed, and their places supplied by benches of oak, pierced with Perpendicular tracery, and carved ends. The "parish pounds" have also been superseded by open spaces of oak. The space under the west window was formerly occupied by the organ and chamber, over which there was a small gallery; but these have all been removed, and the large west window is now seen to advantage, while the school children have seats provided for them, and the ringers have ample room for their work. There is a Perpendicular font near the entrance, which is by the south porch, and this has been furnished up to present a uniform appearance with the rest of the building. The windows in the north wall are filled with plain cathedral glass, but all the others are specimens of window-staining. Several pieces of stained glass were found during the restoration, very much, it is said, of the colour of those recently supplied by Messrs. Clayton & Bell. The decoration of the chancel roof was carried out by Mr. Daniel Bell, by whom the architectural stencil-work has been restored. A quantity of old coins, including a Queen Anne's sixpence, have been found during the restoration, as well as a stone coffin, which was discovered about 1 ft. under the door of the church, and contained a skeleton, with the head turned aside, suggesting the idea that the body had been interred alive. Some tessellated pavement, in a perfect state of preservation, with the royal arms quartered on it, was also dug out, but the coffin allotted to it has not been disturbed. The church is to be warmed by hot-water apparatus, supplied by Mr. Richardson, of Wincanton; and every appliance for ventilation has been provided. Mr. Alfred Bell, of the firm of Clayton & Bell, conducted the work, including that of the choir, which contains three subjects—the Crucifixion, the Transfiguration, and the Ascension; Mrs. Martin and Mrs. Percy (the rector's mother) each gave a window on the north side of the chancel; Miss Grove placed a stained-glass window in the western end, the subject being the Last Judgment; and the rector one in the south wall of the chancel. The whole restoration has been carried out under the direction of Mr. C. Backeridge, of London and Oxford, architect. The contract for the building was taken by Messrs. Farthing & Doddington, of Mere, by whom the work has been executed. The organ formerly used in the church had become dilapidated and feeble in its tone, and, to add to the importance of the work of restoration, a new instrument has been purchased from the well-known firm of Broadwood, of Bath. The organ cost 160*l*.

Raughelham (Cumberland).—The new church of St. Jude's, Gategill, has been consecrated by the Bishop of Carlisle, as a chapel of ease to the parish church of Raughelham. The site was presented by Colonel Salkeld, of Holm Hill, who, together with Miss Salkeld, was one of the principal promoters of the new church, and in addition to other gifts, subscribed liberally. The new church is situated upon the descent of the hill before entering the village. The style of architecture adopted is Early English. The plan comprises nave, 45 ft. 6 in. by 24 ft. 8 in.; with chancel, 22 ft. by 14 ft. 6 in. The vestry and chapel adjoin the church, and are roofed transversely. The side elevations are divided into bays by buttresses, with lancet coupled windows. On the south elevation is an entrance porch. The lower part of the west elevation is pierced with three lancet windows, with large circular window in the gable; and rising from the south-west angle is an open belfry, with slated roof, terminating with a gilt cross. The east elevation has three lancet coupled windows, filled in with stained glass. All the external walls are built with the local stone, quarried, relieved with toolled hands. All the gables have stone crosses or gilt terminals. The interior walls are plastered. The roofs are high-pitched, open, and with framed principals, stained and varnished, and covered with slates of two colours, with enriched cresting. The seats are of pitch-pine, fitted with book and kneeling boards. The stalls in the chancel are moulded, also of pitch-pine. The chancel is laid with encaustic tiles, and the windows filled in with stained glass by Mr. Wailes, of Newcastle-upon-Tyne. The heating apparatus is supplied by Haden & Son, of Trowbridge. All the seats are free and unappropriated, affording accommodation for 150 persons. The site is surrounded with a stone wall, crested with wrought-iron railing. The stained glass window in the chancel is a memorial window, placed there by Mr. Thomas Salkeld Bramwell, in remembrance of his parents. The subject is the Birth, Death, and Ascension of Christ, each incident occupying one of the large lancet panels. The large circular window at the west end of the church was presented by Miss Salkeld, of Holm Hill. The stained glass in the building was by Messrs. Bragg, Wilson, & Baty, of Gategill; for the carpenter and joiner work, Mr. T. Ward, of Raughelham; slating, Mr. Nanson, Carlisle; plumbing and glazing, Messrs. Thomson & Sons, Carlisle; plastering, Messrs. Johnston, Bros.; ironwork, Mr. Thomas Corbett, Carlisle. Mr. John Lowe, of Manchester, architect, supplied the design for the building. The church was built of stone from the quarries in the neighbourhood. The outlay, including boundary wall, &c., has been 1,260*l*.

Drogheda.—After extensive alterations St. Mary's Church has recently been again opened for divine service. The south entrance has been closed, and the porch converted into a baptistery, and laid with encaustic tiles. Two new entrances have been made at the west end of the north and south aisles respectively. The seats under the gallery have been brought forward, thus doing away with the passage which led across the church from the south entrance. The old reading-desk has been removed, and the seats allotted to the female teachers and select class in the Sunday School extended. The capitals of the columns and other stone-work which had been left uncarved, have been carved, and the whole of the church relighted by cornices, manufactured by Messrs. Hart, Son, Peard, & Co., of London. The chancel has been tiled with Minton's encaustic tiles, and re-seated, and the whole building re-coloured and cleaned. The entire cost of the works will be about 800*l*. They were done at the superintendence of Mr. G. J. Redmayne, Manchester, architect.

Adisham.—The parish church has recently been restored and re-opened. The cost of the work done is about 2,000*l*. Funds are wanted for the completion of the decoration. The architect was Mr. Wm. White, of London; and the work was carried out by Messrs. Denne, of Walmer.

Northwiche.—The prosperous little port of Blyth, celebrated for its steam coal, is about to erect a new Presbyterian Church. The structure will be built of brick, with terra-cotta dressings, and will have a tower and spire at the south-west angle. Mr. Thomas Oliver has been appointed the architect.

Croskhill.—The new church of St. Thomas, Sutton, Crosskhill, has been consecrated by the Bishop of Ripon. Situated in the extensive parish of Kidwink, the township of Sutton, embracing a population of 2,200, has hitherto been without a place of worship in connexion with the Church of England, other than the school-room. The parish church of Kidwink was found to be situated at too remote a distance to be made available for the requirements of

the scattered district of which Sutton is the centre. The late Mr. T. B. Baintow, of Sutton Mill, made a bequest of upwards of 3,000*l*, for the purpose of erecting the new church of St. Thomas, besides leaving a further sum of 1,000*l*, for the endowment of the living. The intention of her deceased husband has been carried out by Mrs. Baintow, and hence the new building. Built in the Geometrical style of architecture, the new edifice comprises nave, north and south aisles, organ chamber, north chapel for vestry, and south chapel for school children. A tower, 60 ft. high and 14 ft. square, is placed at the west end of the building. It is surmounted with embattled parapet, with carved and crocketed pinnacles, and provision is made to carry up a spire to the additional height of 60 ft. at some future time. The extreme length of the church is 81 ft.; the breadth, 42 ft.; and the height to the ridge, 36 ft. It is intended to accommodate 350 adults and 80 children. The roof is open-timbered. The pews are open, and made of deal stained and varnished. The chapels are separated from the chancel and aisles by open traceried pitch-pine screens, and the latter material is made use of in the construction of the choir stalls and altar rails. A stained glass window has been introduced into the west end of the church. It has been furnished by Messrs. Clayton & Bell, and is intended as a memorial of the late Mr. Thomas Baintow. The tower is intended to contain a peal of bells, one of which (the tenor) has already been cast and hung. The entrance porch is placed on the north side of the church, and the heating chamber is constructed under the vestry, the steps being of the D pattern, and manufactured by the Messrs. Clapham, of Kighley. The windows are enriched with tracery, and the apexes of gables with carving. The pulpit and font, which are executed in Monkton Moor stone, are specimens of what can be done in this limestone (closely resembling and allying with a stained glass), and carved. The caps and acroteria, and the carving throughout, have been executed by Messrs. Farmer & Brindley, of London. The whole of the work has been carried out from the designs of Mr. W. H. Crossland, of Leeds and London, as architect; and Messrs. John Chambers & Son, of Bishop Monkton, are the contractors. The cost of the church, with boundary walls and gates, &c., is about 3,000*l*.

Kensal New Town (London).—A new church, which will be known as the Church of St. Andrew, at Kensal New-town, Upper Westbourne Park, has been consecrated. The new building is situated in the centre of a densely-populated district, of comparatively recent formation, in the extreme north-west of London. This district has formed part of the parish of All Saints, Notting Hill; but henceforward it may be looked upon as a district parish in itself. The style is a combination of the Early Gothic and Italian. The aisles are separated from the nave by twelve arches, supported by columns of Devonshire marble and carved stone capitals. The transept is covered by a groined arch, which is carried by mutilated windows and marble pillars of the Ionic order, and the ground is of tessellated pavement. The pulpit, reading-desks, and choir are of stained deal. The building has already cost 8,000*l*, of which 5,000*l* have been subscribed by a benevolent lady who does not wish her name to be known, and 3,000*l* from the Bishop of London's Fund. There are 540 sittings in the church, and the church is open to all.

Droicthead.—The Church of St. Nicholas has been consecrated. It is built in the Decorated fourteenth-century style, and consists of a nave and south aisle, with provision for a north aisle in future. At the south-west angle there are a tower and entrance to the church. The edifice contains 250 sittings, all free. The seats, which are of deal and open, are stained and varnished. The roof is open and composed of the same material, varnished. The pulpit is of stone, and is not yet finished as to its carving. The only carvings that are completed are the capitals of the chancel arch, the capitals of the other pillars being left for future carving. The chancel east window is of stained glass, and was presented by Mrs. Miller, of London, who also gave the sum of 500*l* towards the erection of the church. "The Ascension" is the subject of the east window, and was presented by Mrs. Miller in memory of her late husband, and the four smaller windows, the subjects of which are—"The Nativity," "The Crucifixion," "The Resurrection," and "The Descent of the Holy Ghost," were also presented by Mrs. Miller in remembrance of her own and her husband's

parents. The windows are by Freedy, of London. Mr. John Smith, of Westacre, the architect, who has rendered his services gratuitously, gave the tessellated pavement of the altar, as well as an iron chest for keeping the registers of the church. The altar-rail is of polished oak, with gilt and painted iron standards; the chancel is fitted with stalls, and the prayer-desk and lectern are of polished oak. On the north side of the church there is a small vestry. The tower is designed for a spire, which it is hoped will ere long be erected. The church is heated with hot air, the apparatus having been constructed by Rimington, of Skipton. The burial-ground adjoins the main road, and contains an acre of land; it has been purchased by the parish, and is fenced in with palisades and iron rails. The church is situated on a gentle eminence between the railway station. It is built of stone obtained from Hadley, in the parish of Ombesley. The builders are Messrs. Osborn & Iward, of Malvern. The cost of erection is 1,700*l.*, independently of gifts.

Hastings.—The Church of St. Andrew, Apostle and Martyr, in St. Andrew's-road, has been opened for divine service. The new church is a temporary structure, formed of corrugated iron plates fixed to a timber framework, and lined internally with deal. It has a chancel, organ, and vestry-room, and will seat 550 persons. The open sittings and the whole interior timberwork are stained. The interior is decorated with a font, carved, and supported on marble pillars, is seen at the west end of the aisle. The organ (by Holdich, London) is placed on the floor level, in the north-east corner. A Gothic arch separates the nave from the chancel.

Cotehill (near Carlisle).—A new church for the district of Cotehill and Cumbhown has been consecrated by the Bishop of Carlisle. The edifice, which is located at the Church of St. John the Evangelist, is situated at Cotehill, upon an eligible site, presented by Mr. Peacock, of Cumbhown, and is a light structure in the Early English style of architecture. The building is constructed of the white and red freestone of the district, and comprises a nave, with a tower, and a chancel 20 ft. square. The east end is ornamented with a tower surmounted by a steeple or lantern, and the chancel is lighted by a lancet window, surmounted by a rose exhibiting some simple tracery. The interior arrangements are of the simplest. Mr. Norman, of Carlisle, who has the slating of the church, has contributed to the appearance of the church by an ornamental rendering of the slates not specified in his contract. The church has been erected at a cost of somewhere about 1,250*l.*

SCHOOL-BUILDING NEWS.

Gloucester.—St. Aldate's School has been opened. The main apartment forms a parallelogram over 40 ft. long and more than 18 ft. wide in its interior. There are also a class-room and a lavatory. A movable partition, so framed that, with treatise, tables may be formed on any festive occasion,—divides the room into two schools; and, including the class-room, space is given for about 150 children. The walls are of red brick, with black bands, the heads and sills of the doors and windows of Bath stone. The style is of an Early Geometrical type. The south front has four small lancets and two large three-light windows, with circles in the belfry. The entrance is up above the eaves and dormered in the roof. The roof is covered with tiles, and four trefoil ventilators rise from it. At the north end there is a porch, and the usual offices are under a lean-to roof. Internally, the roof-timbers appear and are varnished; the ceiling is on top of the rafters and colored. The floor is of deal, and at each end there is an ornamental Painted brick fireplace. The architect was Mr. J. W. Hingall, of Oxford; the builder, Mr. King, of Gloucester. The site was provided by the taking down of some old houses almost in front of the church.

Stamford.—The Roman Catholics of this town are erecting a school on the site of Broad-street, where for many years has been the public pig-market, but which was purchased about twelve months since for the purpose to which it is in future to be devoted. The general style of the building will be Gothic, in keeping with the church adjoining. Messrs. Goldie & Child, of London, are the architects of the new school, and its erection is under the supervision of Messrs. day & Cave, of Great-bam, the builders of the church and presbytery. The works are progressing.

Otterton (near Duddiegh Salterton).—Some infant schools have recently been built by Lady Rolfe, of Bickon, at Otterton, and contiguous to the parish church of St. Michael. Mr. Forry was the architect employed. The designs for a church have also been prepared by the same architect. This building, which is to be commenced immediately, will be entirely new, with the exception of the lower portion of the ancient tower. The church will consist of a nave, chancel, and two compass-roofed aisles with a north and a south porch. The walls will be constructed of Berridead stone, the quoins and dressings being of Ham-hill stone. The nave will have an open roof, and the chancel a paneled and ribbed ceiling, both of oak. The internal arcades are to be formed of Caen stone, and the walls abashed with stone. Devotional marble cylindrical shafts will carry the moulded nave arcade. The church is to give accommodation to between 700 and 800 persons. The total cost will amount to about 8,000*l.*, which will be defrayed by Lady Rolfe. The style employed is the Geometrical Decorated. Mr. Burbridge, of Bickon, is the builder of the schools, and will also carry out the church.

FROM AUSTRALIA.

Melbourne.—A new Wesleyan church has lately been erected in Hotham-street, East Melbourne, and is now open for divine service. The first stone was laid on 12th September. The building has been erected at a cost of about 650*l.*, with the intention, at some future period, to erect a more commodious church, and use the present building as a school-room. A new Presbyterian Church has been opened at Pleasant Creek. In style and construction, it is Gothic, but on general dimensions, which have been put down the cemented rock that forms the principal feature of the eminence on which the structure has been raised. In the clear, the building is 67 ft. long, by a breadth of 34 ft., the side walls having an elevation of 24 ft., with the ridge rising to the height of 38 ft. The building is lighted by a double row of windows containing diamond lights, and variously coloured borders; of these there are fourteen on either side, in addition to one stained window, inserted in the apex immediately behind the minister's platform, which is placed in a recess, at the extreme end of the edifice, and which falls back from the main structure a distance of 18 ft. Sitting accommodation has been provided for 350 persons. The material used throughout is Kauri pine (varnished), and book-boards and bat-rails are provided in every instance. In lieu of an ordinary pulpit, is a raised platform for the preacher, 2 ft. 6 in. above the floor level, on the front of which, below the book-boards, is a Gothic parapet Gothic parapet in order. In front of the reading-desk the choir has been placed at an elevation of 6 in. or 8 in. above the congregation, and the singers are surrounded by a low railing in keeping with other portions of cathedral woodwork. The architect was Mr. R. A. Love. It is reported that a process for etching on metals by the medium of photography has been discovered by a Melbourne photographer. The matter, however, is kept as secret as possible, with a view of securing patents simultaneously in Europe and America. It is believed that the discovery, if it is what it is represented as being, will cause a revolution in the engraver's art.

The foundation-stone of what was Peter's Cathedral, at North Adelaide, was laid on the 25th of June last. The ground upon which the cathedral is to be erected occupies a very prominent place at the intersection of Pennington-terrace west with the City Bridge-road. It includes a trifle in excess of an acre, and has been purchased on one side by a stone, and with brick facings and copings. The building itself is to face the angles, standing north-west and south-east, and the probable cost when completed will be from 20,000*l.* to 25,000*l.* The design is by Mr. Butterfield, of England, but it has been somewhat modified by Mr. Woods, of the firm of Wright, Woods, & Hamilton, to whom the superintendence of the work has been entrusted. The principal alterations made consist in heightening the tower, putting in windows, and so forth. The style of the edifice is described as Transition and Decorated, presenting a general resemblance to the Gothic. The total length internally will be 168 ft., by a total width of 68 ft., and a height of 70 ft. to the ridge. The centre is divided by transepts into nave, choir, and chancel. The nave, which is for the

congregation, is divided by two rows of columns or piers, the space between from centre to centre being 38 ft. From these will rise a gallery leading to the roof, which will be open, with Baltic timber stained and varnished. In the choir, there will be benches fitted up for the singers, and in the side aisles of the chancel will be the usual cathedral canon-stalls. The first transept projects very slightly on either side. Beyond the choir is to be a secondary transept separating the chancel from the choir, one end of which is intended for an organ-chamber. The chancel will have two ornamental tracery windows, which will probably eventually, if not at once, be fitted with stained glass, and it will also be lighted by windows at the side, as well as at either end of each of the transepts. The four consist of two towers with buttresses, decorated windows, and minarets, spires to be executed in cut stone, banded, to rise from the centre to a height of 140 ft. Each tower will be divided into belfry and ringing chamber, besides which there will be an entrance through it to the interior of the cathedral. The main entrance is between the two towers, and is to be reached by a doorway through a narthex, or porch, and above it will be a large ornamental window. The side of the building are to be supported by buttresses of cut stone, between which will be small complex lights in the nave; and in the clearstory or upper part there will also be two-light tracery between the nave and choir. The roof of the nave will be two tiers of timber springing from the centre to the height of about 110 ft. The whole of the dressings, internal and external, are to be of freestone, and effect will be produced by the use of white and brown stones in bands. The other portion of the building will be of Glen Osmond stone, and the roof of the choir, which is also to be of freestone, is to be of the same material. The building, when completed, is expected to accommodate 1,000 or 1,200 persons. The nave is to be furnished with chairs, not benches. It is thought probable that at some future time a peal of bells will be placed in the tower. No contract has yet been taken for any part of the building; but it is expected that the work will be promoted without further delay. The cost of the portion to be first erected is estimated at some 12,000*l.* or 13,000*l.*

Australian Diamonds.—According to recent accounts, an extensive area of ground has been taken up for diamond mining on the Oodgong River, near Boree, in New South Wales; and it is said that only where diamond mining has as yet been prosecuted on a large scale. The Australian Diamond Company have provided themselves with a steam-engine for working their gem machinery. Fresh discoveries are continually reported. Diamonds have been found along the greater extent of the Oodgong River, and also in the neighbourhood of Woodstock, and higher up at Woorago. A gem found in the Espin district was recently forwarded to Mr. Cripp, of Melbourne, who pronounced it to be a diamond: this is the first Bendo diamond that has been heard of. A Lyttleton (New Zealand) journal states that a miner has brought a number of coloured crystals into Christchurch, and on inspection one stone about half the size of a pen, was found to be a diamond.

Books Received.

The Conservation of Pictures. By MANTRER HOLTOAKE. London: Dalton & Lucy, 1870. The objects Mr. Holtoake has in view in this little work are to urge the importance of preserving fine pictures that remain to us, and to show that the conservation of pictures (not to say restoration) is practicable and indeed necessary. It is a protest in fact, with reservations, against the belief induced by abuses that the so-called picture-restorer is to be uniformly avoided. The observations are very sensible, marked by a right reverence for great artist's own work, and calculated to have a good effect.

Pro Aris et Focis. By FANNY ALKIN-KORNBREIT. Printed for private circulation by Yates & Alexander, Symond's Inn.

The author of this eloquent appeal to women against the teachings of the strong-minded of their sex is better known as "The Dean," or the author of "The Dean," than by her own name. She is herself strongly minded, nevertheless, though womanly still. Her arguments will powerfully influence those of her sex who are not "strong-minded;" though some of these

arguments will be easily demolished by her opponents. Much may be said on both sides of the question; which goes to show that neither extreme can be right,—more especially the "strong-minded" extreme. That woman's mental nature differs from man's, there can be no rational doubt. It is more spiritual and less self-asserting,—more intuitive and less reasoning,—more ideal and less matter-of-fact,—more radiative or less concentrative than man's. It is, therefore, adapted, and hence intended, for a different sphere. That woman's mind is the mind and the nature best adapted for external life, as it were; for facing the rough range of outward nature, and the strife requisite to "make way in the world." Here are the mind and the nature best adapted for internal life for domestic duties. She is the type of the ministering spirit of ocean and comfort to the man, and hence of the angel, even if she be a devil, since the devil was an angel. For woman to set herself up as a rival to man, therefore, must be radically wrong. But if "the times are out of joint" as regards woman's mission as man's counsellor and comforter,—if she be too little "marring and giving in" to the "strong-minded" man. She is compelled to marriage, "what is she to do?" She is compelled by ungallant man to provide for herself, to walk out into the external life and strive as man himself does for a livelihood. The cause of the movement is a deep-seated one, therefore; and until that cause, or those causes, whatever they be, which hinder and obstruct the universal law of marriage among mankind, is removed, the higher their civilisation, the more potent will the movement of the strong-minded women on their own behalf become.

Still there is a great deal of truth and force in "The Deans'" arguments, and we can only hope that their ultimate tendency may be to excite the attention of her strong-minded opponents, as regards their modes of attracting the permanent regards of the man; for, doubtless, those shortcomings exist among women no less than among men; and especially in the early teachings and the general "bringing up" of girlhood. Is she properly taught to fulfil her domestic destiny? Does woman, who is also the man's early teacher, rightly fulfil even that duty as regards the end in view? The influence of early training, both on boys and girls, is all-powerful to any social end; and much might be done even in a single generation to restore that balance which is evidently lost. A despicable money worship on both sides has much to do with the present state of affairs between the sexes. So has the neglect of useful accomplishments on the part of the woman, and the desire to make her as frivolous and useless as possible to the man, as a comforter, or even as a counsellor.

Principles and Construction of Machinery: a Practical Treatise for Steam and Builders, and Practical Mechanics. By FRANCIS CAMPIN, C.E. London: Atchley & Co., Great Russell-street.

A Past president of the Civil and Mechanical Engineers' Society, as Mr. Campin is, cannot but be a fitting and competent writer on the principles and construction of machinery. Mr. Campin here treats of the laws of the transmission of power, and of the strength and proportions of the various elements of prime movers, mill work, and machinery generally. The work is the substance of a carefully revised digest of the author's oral instructions as a teacher in training pupils. He has aimed at setting forth fully the laws of construction in reference to strength of parts, while stripping the subject of much cumbersome matter with which it has heretofore been loaded. He teaches not only why a given machine produces a certain effect, but also how practically to make it.

No Rebuilding Lanes in the City. By WILLIAM F. ROCK. London: Edgingham Wilson.

THIS is an appeal against the threatened rebuilding of Bucklersbury, and the covering of the rest of the triangular plot now cleared next the Mansion House. The feeling is strong in favour of preserving this open space. At any rate, Charlotte-row must be greatly widened, and Bucklersbury must be greatly widened, which would make the plot very small, and we do hope the Metropolitan Board of Works, and the Corporation together, will see what can be done in order to keep the whole plot open. We shall not be amongst those who will advise the Board of Works if, after all, they should utilize part of

it. The value of the whole is called 190,000L, and the Board are forced to consider the ways and means. But we shall be amongst the heartiest applauders if they show up courage to do the right thing. They will find hereafter that it is to such an act as this would be that people by and by will appeal when they are estimating the value or otherwise of the Board.

Miscellaneous.

The Public Health in 1869.—Under the title of "The Weather and the Public Health in 1869," an elaborate paper has been issued by Mr. Plant. From this paper we extract a few statistics of details. The population of Manchester in 18 years—1851-69—with a high death-rate, increased at the rate of only 11 per cent. per annum; whereas the population of Liverpool, with a still higher mortality, advanced in the same period 2 per cent. per annum. The towns which have increased the most in population are Sheffield and Birmingham. Liverpool, in the 18 years, at the rate of $2\frac{1}{2}$ per cent. per annum. Sheffield, at the rate of $2\frac{1}{2}$ per cent. per annum. Sheffield, however, with 105 inhabitants per acre, has a prevailing high death-rate, and Birmingham, with 461 persons per acre, enjoys the lowest mortality of all the large towns. The towns which have increased the least in population are Bristol and Manchester; the former, with a uniform low death-rate, and 361 inhabitants to each acre of ground, and the latter, with a high mortality, and 827 persons per acre. Taking the five sea-ports in England, we find that during the last 18 years population has increased as follows:—London, 2 per cent. per annum; Liverpool, 2 per cent.; Hull, $2\frac{1}{2}$ per cent.; Newcastle-upon-Tyne, $2\frac{1}{2}$ per cent.; Bristol, $1\frac{1}{2}$ per cent. per annum. Liverpool is the unhealthiest, and London and Bristol the most salubrious of all these ports. Birmingham still ranks the highest for health.

If the authorities of this town would examine the sanitary condition of certain districts, the health of Birmingham might be made even more healthy. There is a high death-rate, from zymotic and other causes, in St. George's, and other districts. The zymotic mortality goes on year after year, and the sanitary officers do not appear in the least concerned. The larger number of deaths are blended with the small number of more salubrious localities of Edgbaston, &c., and few persons are the wiser, because the general result appears satisfactory. It is a deception, and the sooner the real facts are revealed, and the health of Birmingham properly published, the better for our sanitary guidance.

Progress of the New City and County Lunatic Asylum, Hereford.—The architect of this edifice reports "satisfactory progress. With the exception of the superintendent's house, the whole of the foundations are in, and the walls plumb high. The administration block is nearly covered in; the dining-hall and chapel ready for the roof. The men's workshop block is covered in, and great portions of men's No. 1 ward also. The brew-house building is roof high, and men's infirmary building nearly so." The desirability is suggested of heating by steam or hot water the single rooms of the males' and females' infirmaries, in addition to the open fire places therein. The architect has directed the contractor to complete the more advanced building, the laundry and washhouse, and superintendence of house, as quickly as possible, so that a portion of the building may be in a position to receive patients by August or September next. The visiting justices superintending the erection have recommended the purchase of 110 acres of adjoining land, for cultivation by patients, and for airing-grounds, &c.; and this has been agreed to at the sessions.

Cornwall Granite Workers.—A correspondent of the *West Briton* writes:—I regret to hear of many very important contracts for granite being given to the French and other contractors, with a little concession on the part of working men, might have been obtained for Cornwall. The consequence is that a large amount of capital is lying idle, and many men are out of employ, the masters' works being comparatively idle. The granite masons formerly had 4s. 6d. a day; they then insisted on doing so, with the additional privilege of having all their tools sharpened at the expense of their employers. But even this concession was not sufficient, and nothing less than 5s. 6d. a day would satisfy some of the men. The masters found this far beyond even what would give them a new shilling for an old one, and consequently decline to give the order which would involve them in a loss instead of a profit.

Lecture to Jewish Workmen on Houses and their Ornaments.—On the 9th instant a lecture was delivered by Mr. Ellis A. Davidson on this subject at the Jews' Infant School, Spitalfields. The audience were mostly working people and their families. The lecturer depicted the first habitation of man from the time of his banishment from Eden, which habitation, he said, was afforded by a tree, with a few skins of animals for cover. He next proceeded to show one or two civilised dwellings, one of which was designated as the first working people's habitation. This was a straight pole stuck in the ground, with a few skins of animals for a roof, at the top of which the children slept while the parents were out hunting. The lecturer exhibited a model cottage, the usefulness of which was explained by showing that the projecting points of the roof were not so much wanted for rain or bad weather as for protection from heat; so that the more it projected the more we got the shade. He went on to show the real principles of arch-building, and where the strength lay. Having given a rapid sketch of the history of building, the lecturer proceeded to describe a few ornaments, commencing with the Egyptians, as the most ancient. The lecture was instructively illustrated.

Maddening Drink.—Not long since we pointed attention to the fact and the serious fact that of late years the inflicting effects of drink, and the dreadful crimes resulting from it, were greatly on the increase,—a fact which could only be attributed to the adulteration of the drink by poisonous agencies, producing effects simulative of intoxication, but really of a different and far more character. We observe that a Liverpool brewer, a Food-law guardian, not only corroborates this, but states that in lately visiting the pauper lunatic asylums in Lancashire, and asking as to the causes of the increase of lunacy in such asylums, he was told that drink was the chief cause of the madness of paupers. Yet, and drink is the chief cause of pauperism itself. The guardian urged the appointment of inspectors of drinks, such as those of food. "There was a law" as he observed, "which, if put in force, punished people for using poisonous ingredients in the making of beer,—preventing them from using grains of paradise, was comical, oil of vitriol, arsenic, and other things that were used in making beer, in addition to malt and hops." So said the brewer. Another guardian remarked on this, that after such an *exposé* of the secrets of the beer trade, anybody who drinks it must be mad already.

Christmas Lectures at the Royal Institution.—A series of six lectures adapted to a juvenile auditors has as usual been given at the Royal Institution. This time Professor Tyndall chose "Light" for his subject. "Faraday and Newton himself," says *Scientific Opinion*, in reporting the lectures, "produced a series of lighted balls which witnessed the brilliancy of colours produced by a transparent film, such as was shown in one of the lectures. We are referring to the enormous soap-bubble (or rather a bubble made by means of glycerine and oleate of soda), on which the lecturer himself had experimented but the day previous for the first time. This bubble, when in contact with a beam of monochromatic light, produced effects not unlike the fiery flashes of an Aurora borealis at times; while at other moments the softest hues of spectral colours were thrown on the screen." His experiments with the invisible rays of heat alone, obtained by intercepting the luminous rays, were remarkable, though not new. During one of the lectures he produced a little stove, a kind of miniature kitchen-range, with a fire all properly laid, according to the established craft of our housemaids, but of course not lighted. He brought it near that dark, pitch-dark focus, and behold, it was lighted, as if by magic!

I.H.S.—A church in Hampshire, which has been restored, has very recently been re-opened. An altar-cloth was given by a lady well known for the specimens she has worked for numerous churches on such occasions. The letters "I. H. S." were worked in a very prominently worked on the sacred vestment. The initials of a parishioner, whose family restored the chancel, happen also to be I. H. S. On the day the church was re-opened, says the *Bristol Times*, a person from the neighbouring parish, at first sight of the altar-cloth, exclaimed to a friend,—"Oh! I. H. S. who gave us this? It must be Mr. John Henry S—." It is very good of him to contribute in more ways than one.

The Little Girl who made San Francisco
Popular and Famous.—Captain Sutter, an
 ex-officer of Charles X.'s Swiss Guards, who had
 been forced to emigrate in 1833, had settled in
 California and founded a little colony, which he
 called "New Helvetia." In the year 1847 he
 entered into a contract with a Mr. Marshall to
 have a saw-mill built for him on a branch of the
 Sacramento river. During the progress of the
 work, a little girl, the millwright's daughter,
 picked up a shining yellow lump under the
 mill-race, and showed it to her father as a
 pretty stone. Marshall brought it to
 Captain Sutter, who at once recognised the
 precious metal, made careful investigations, and
 soon found that the whole country watered by
 the Sacramento river and its numerous tribu-
 taries abounded in gold. San Francisco was
 then a wretched village, containing some 400
 inhabitants; in a few years the population rose
 to 40,000; and it is now a magnificent city, the
 capital of the western world, the terminus of
 the longest line of railway ever planned or
 executed, and the rival of the greatest cities
 of the world. The gold which has been the
 cause of the great wealth of the government
 of America. And all this has been brought
 about in twenty years by a few tons of gold!

A New (1) Application of Water Power.
"H. J. W." in the *Pall Mall Gazette*, notes the
 discovery of a new store of force for modern
 engineers:—"It certainly seems strange enough
 to speak of the power of falling water as a new
 force, but though water has been at work turning
 mills since, probably, the time of Moses, if not
 before, this seems to be the first time that it has
 been used in works of such magnitude as the
 Mont Cenis tunnel. If the aspirations of the
 French engineers are carried out, Switzerland,
 as being the most mountainous country in
 Europe, is likely to cut us out entirely. Her
 waterfalls will render our coalmines useless.
 However, we have Wales and the Highlands to
 fall back on, to say nothing of all the lake dis-
 trict: Stock Gill Force may come to merit its
 name in more senses than one. It may also be
 some consolation to us to consider that water-
 falls are not usually in the most accessible parts
 of the world. The coalmines are in *esse*, and
 the waterfalls, as motive powers, only in *potu*;
 so our manufacturers need not yet hurry them-
 selves to migrate to Switzerland or the banks of
 Niagara."

"The Churches of Llandafarne."—A
 volume under this title is about to be pub-
 lished by subscription, containing plans and
 views of the seventy-six churches in the districts
 of Glendale, Cogeddale, Reedsdale, Bambergh,
 Morphet, North Durham, Holy Island, Berwick-
 on-Tweed, Tweedmouth, and Alnwick; the whole
 comprising, illustrating, and contrasting the
 fabrics in the archæology of Llandafarne; made
 from actual surveys, by E. R. Wilson, architect.
 It is said this survey will be found full of his-
 torical, archæological, and parochial interest;
 and it is also novel, as most of the churches in
 it have not been illustrated or described before.
 The author has been collecting the materials for
 the last ten years, with a great expenditure of
 labour, time, and money, in order to make the
 work complete. Battered as some of the fabrics
 have been by the Scots and freemasons, they all
 possess features of great interest.

Panic in a Theatre.—In the American
 Theatre, Walnut-street, above Eighth, Phila-
 delphia, while crowded with people, a cry of fire
 was raised. The alarm was occasioned by the
 breaking off or derangement of one of the
 brackets on the east side of the theatre under
 the gallery, which caused the gas to pour out
 in a large volume, and the commotion with
 one of the lights, soon took fire. The flame was
 about as large as a man's arm, and when ob-
 served by the dense mass of people, the excite-
 ment can be more readily imagined than de-
 scribed. At length a gentleman came forward,
 accompanied by a number of the *attache*
 of the house, with buckets, &c., &c., and
 after some twenty minutes' hard labour, suc-
 ceeded in assuring the people that there was not
 the slightest danger, as the accident had been
 repaired. This had the desired effect, and the
 performance was proceeded with.

A New Light.—A new artificial light,
 especially applicable to photography, has been
 tried, it is said, with much success. It is pro-
 duced by rendering cylinders, composed of
 magnesia and titanate acid, incandescent by the
 oxyhydrogen flame.

Accidents.—The roof and part of the walls
 of extensive dye-works, in Richebourn-row,
 Edgware-road, Paddington, have fallen in. The
 large number of workpeople employed on the
 premises had not begun their day's operations.
 It is supposed that there must have been some
 defect in the joists.—Three persons have met
 with their death at Penfild, in North Devon,
 by the falling of a chimney. A house near the
 chimney was in a dilapidated state, and in con-
 sequence of the chimney falling the premises
 were entirely demolished, the three inmates being
 buried in the ruins; others escaped. The chimney
 which fell was a stone one.—In a circus at Dun-
 kerque, in the north of France, the public were
 leaving after the performance, when a part of
 the flooring gave way and precipitated 150 per-
 sons to the ground beneath. Many received
 contusions more or less serious, but no lives
 were lost.

The Folkestone Bathing Establishment.
 The result of the works of the Bathing Estab-
 lishment at Folkestone has realised the anticipa-
 tions of its promoters. The report of the
 directors for the first half-year of the existence
 of the establishment shows that "notwith-
 standing the drawbacks of a short unfavourable
 season, and the disadvantages necessarily flowing
 from many details in the arrangements being in
 an incomplete state at the opening, and which
 required much time to make perfect," the bal-
 ance-sheet to November 30th shows a net
 profit enabling the directors to pay a dividend of
 8 per cent. per annum on the paid-up capital,
 and carry forward a balance of nearly 200 to
 the next half-year's account.

New Process of Photo-Lithography.—
 Mr. Francis, of the Athenæum Press, having
 secured the invention from Mr. Griggs, has in-
 troduced an entirely new method of producing
 copies of prints and pictures to the publishing
 world. The combination of photography with
 lithography was first attained by Sir Henry
 James, of the Topographical Department, but
 the process of Mr. Griggs claims to be a con-
 siderable advance on the original invention.
 Mr. Griggs takes a photograph of a print or
 picture in the ordinary way, but upon paper
 prepared in a manner only known to himself.
 The photograph thus taken is laid upon the
 stone and transferred, as in simple lithography,
 when it produces copies of the original picture
 with accuracy and clearness.

The Finsbury Estate.—"Corporator," in
 the *City Press*, says:—"The possession of the
 Finsbury Estate by the corporation dates from
 the year 1553. The lease was renewed from
 time to time. In 1769 an Act was passed by
 Parliament, enabling the prebendary of Finsbury
 and his successors to grant a ninety-nine
 years' lease to the City, commencing from the
 year 1768, to be subsequently renewable every
 fourteen years. In 1769 Dr. Wilson, the then
 prebendary of St. Paul's, procured the passing
 of a private Act, apparently with the view
 of furthering the matter, but differing from the
 former one in having no renewal clause in-
 serted. The result has been that the corporation
 has now no interest in this valuable prop-
 erty."

A Greek Church in Liverpool.—On
 Friday, the ceremony of consecrating the new
 Greek Church of St. Nicholas, at Liverpool, was
 performed by the Archbishop of Grana and Tarragona,
 assisted by several priests from London, Man-
 chester, and Liverpool. The new church, which
 is situated on the Prince's Park-road, is built of
 ornamental brick, and is surmounted by four
 domes. The interior is divided into three sec-
 tions—a large vestibule, the body of the church,
 which is vaulted, and is adorned with mosaics,
 and the sanctuary, which is separated
 from the body by an elaborate screen. We are
 compelled to defer a description of the building.
 The authorship of it is in dispute.

Bail for the Builders' Benevolent Institution.—We
 desire to draw attention to the circumstance
 that this annual festival in aid of a
 deserving charity will take place at Willis's
 Rooms, on Thursday next, the 27th. We have
 made this notification under similar circum-
 stances many and many a time before. Whether
 or not it has effect, whether or not it leads any
 of our readers to aid the Institution, whether
 or not the committee think the act obliging, we
 do not know. Anyhow, we fulfil what we con-
 sider a right prompting, and must leave the
 result to chance. The Institution needs funds.

Explosion at Westminster Bridge.—On
 the Surrey side of Westminster Bridge a loud
 explosion occurred on the 19th inst. The cause
 was a gas meter-house, a small cell formed in the abutment
 of the bridge, on the Surrey side, access to which
 is obtained by the steps immediately in front of
 the Coronet public-house. The explosion forced
 out the doors of the meter-house. A number of
 the lights on the bridge were extinguished. The
 meter itself was unharmed. The accident was
 mainly caused by a defective cock, which had
 been temporarily plugged with a piece of wood.
 When the gas was turned on to light the bridge,
 the plug was inadvertently withdrawn, thus
 allowing the gas to escape and accumulate in
 the house. The explosion occurred when the
 lamp adjacent to the house was being lighted.

Iron Church and School, Gysman.—A
 galvanised corrugated iron building to be used
 on Sundays as a church, and on week-days as a
 school, has just been completed on the site of
 Hope Mountain. It is capable of seating about
 200 persons, and is lighted by six windows on
 the sides, and a large window similarly at each
 end. The entrance is on the south side through
 a porch. This, in a mountainous district, with
 very bad roads, prevented the greater part of
 the children from attending school; therefore,
 we may presume the building will be a boon to
 the inhabitants. Mr. S. Sothorn, of Wrexham,
 was the designer and contractor.

Chemistry of Smoke.—Mr. W. B. Hutton,
 of Glasgow, proposes that coal, before being con-
 sumed in ordinary furnaces, stoves, or fireplaces,
 should be distilled in close vessels. The heat
 should be contained not long enough to produce
 the ordinary dense coke—which can only with
 difficulty be burned—but to form a soft coke,
 which can be consumed at sea, or in the open
 coal, but without black smoke. According to Mr.
 Hutton's calculations, 1,000 tons of coal will
 yield as much gas and soft coke as would be
 sufficient to realise a profit of 71, of which a
 large proportion would be derivable from the
 sale of the oil and the ammonia as a manure.

The Independent Society of Engineers, Manchester.—The members of the Inde-
 pendent Society of Engineers, which has recently
 been formed in Manchester, have inaugurated
 the formation of the society by a dinner, which
 took place at the Clarendon Hotel. The objects
 of the association are to afford assistance to
 those of its members who may happen to be out
 of employment, or who may be incapacitated
 from work by sickness. At present the society
 numbers forty members. The society has no
 connexion with any trade-union.

Stone from the Jura.—Our attention has
 been directed to a new species of magnesian
 limestone, exhibited at the Institute of Archi-
 tects, by M. Paul de Tineau, proprietor of the
 quarries at St. Yrie, Jura, France. The stone is
 described as very hard, and capable of receiving
 a fine polish, which renders it suitable for the
 shafts of columns, staircase balusters, mantel-
 pieces, and other decorative details, as well as
 for ordinary construction of a superior character.
 The cost of stone delivered in London would be
 about 5s. per cubic foot.

Castings.—We have an account of a new
 method of making castings. The mould is
 made of fine potter's clay, giving great smooth-
 ness of surface. The metal is then injected
 from below by means of a piston working in
 a cylinder, and as some pressure is applied,
 every part of the mould is reached by molten
 metal in a state of compression, so that the
 casting is as smooth as if worked by hand.
 Messrs. Smith, of Philadelphia, who have made
 castings in this way, claim to be able to pro-
 duce screws at the same expense as that fur-
 nished inured in merely manufacturing the
 wire.

The Church of All Saints, Dresden.—
 This church, which has been erected to the
 memory of the late Mr. W. H. Goben, was con-
 secrated on the 27th inst. by the late Bishop
 of British Columbia, acting under a commission
 from the Bishop of London. Illustrations of
 the building will be found in our last volume.*
 The site has been given by the town council of Dres-
 den, in one of the best parts of the town. The
 whole of the windows, except those in the clear-
 story, have been painted glass, with painted glass
 by Hardman, of Birmingham, and Freedy,
 of London. The organ is by Walker, of London.

Architect, Engineer, and Surveyor.

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ILLUSTRATIONS:

Mr. Barlow's Church, Leeds, Holland.—Mr. Cropper, Architect.
Plan of St. Barlow's Church, Leeds.

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SOUTH KENSINGTON MUSEUM.—A COURSE OF LECTURES on "Ornamental Iron Work," will be delivered in the Lecture Theatre, by Mr. J. H. PATER, M. A., of Balliol College, Oxford, on **WEDNESDAY, 19 FEBRUARY 1870**, and the five following **WEDNESDAYS**, at eight o'clock in the evening.—Tickets for the Course, 1s. Reserved seats, 3s. Seats for Ladies, 2s. Reserved seats, 6s.—Tickets will be sent on receipt of postage stamp.—By order.

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ROYAL SCHOOL OF MINES, Jersey.—The FRANKLAND, F.R.S., will continue a Course of Lectures on "Ornamental Iron Work," on **WEDNESDAY, 19 FEBRUARY**, at 8 o'clock in the evening, at the Lecture Theatre, 105, High Street, London, E.C.

KING'S COLLEGE, LONDON.—Professor J. H. PATER, M. A., of Balliol College, Oxford, will deliver a Course of Lectures on "Ornamental Iron Work," on **WEDNESDAY, 19 FEBRUARY**, at 8 o'clock in the evening, at the Lecture Theatre, 105, High Street, London, E.C.

PROFESSOR T. J. WATSON, F.G.S. will continue a Course of Lectures on "Ornamental Iron Work," on **WEDNESDAY, 19 FEBRUARY**, at 8 o'clock in the evening, at the Lecture Theatre, 105, High Street, London, E.C.

INSTITUTE OF PAINTERS IN WATER COLOURS.—THE FORTH WINTER EXHIBITION OF ARTS AND CRAFTS, 1870, will be held at the Royal Albert Hall, London, E.C.

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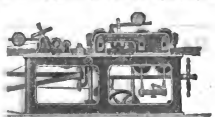
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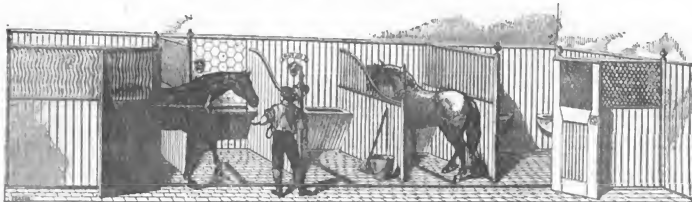
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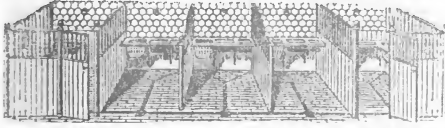
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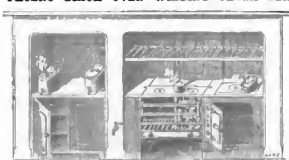


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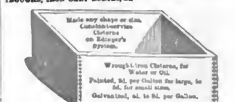
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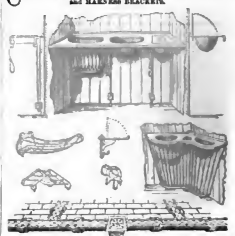
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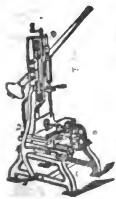
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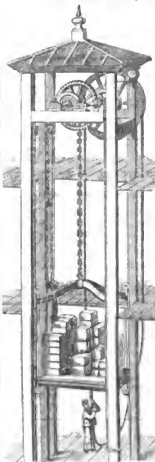
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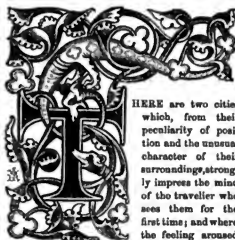
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VOL. XXVIII.—No. 1408.

Grand Cairo.



HERE are two cities which, from their peculiarity of position and the unusual character of their surroundings, strongly impress the mind of the traveller who sees them for the first time; and where the feeling aroused by the sight of them

is not merely admiration of their extreme beauty, but the perception of a quality that they possess which is akin to the sublime. One of these is Venice, the sea-born, sea-girt Venus, as an old writer terms her, springing from the ocean bed, surmounted by the conch of St. Mark's, and graced by multitudes of copolas and towers. The other is the queen city of the desert, Cairo, also rising in grandeur from a long level line, that of the sandy plain, and also crowned with innumerable domes and minarets. Both are surrounded, or nearly so, by a vast and apparently boundless expanse—Venice by that of the waters of the Adriatic, which if pursued to their utmost limits would lead to the shores of Africa and the Pillars of Hercules; Cairo by that of the sandy desert, which if followed out would lead past the kingdom of Theodoros, through the domain of Livingstone, to the territory of the Boesmans and Boers. In both cases this expanse is trackless, except where, in the one case the wrecks of vessels, and in the other the white ribs of the foundered ships of the desert, point out the road; in both cases it is silent, for the velvety footfall of the camel makes no more noise than the oar of the gondolier. And both have the claim of age, for both were founded above a thousand years ago. Thus each has these elements of the sublime in its position—vastness, silence, repose, and hoar antiquity. But in this quality of sublimity, and even in that of beauty, the City of the Sea must yield the palm to the City of the Desert, for when looking at her domes athwart the lagoons, one does not see, as at Cairo, the summit of the eternal Pyramids looming in the distance, nor do the copolas of St. Mark's, and the Sainte, and the tower of the Campanile equal in loftiness or in elegance the domes of the Mosque of Sultan Hassan and other tombs of the Kalifs and the two hundred and fifty minarets attached to the other mosques and sepulchres. We defy any traveller, however much he may have seen of Eastern cities, not to be impressed with the aspect of Cairo when he beholds it for the first time, whether he sees it from the railways of Alexandria or Suez, or whether he looks down upon it from the ramparts of the Citadel of Saladin.

It was our good fortune to behold it for the first time from the latter spot, for it was evening when we reached Cairo, and we sought rest and refreshment in a comfortable hotel in the Ezbekiah, a large square in the outskirts of the city, planted with trees, and surrounded by the prin-

cipal hotels and other houses of the Franks. The next morning we drove to the citadel, through the only street practicable for carriages, preceded by a ranner, who shouted warnings to the veiled women, and turbaned men who thronged the bazars. How we reached our destination without overturning man, woman, or child, in this crowded street, is to us a wonder to this day. Having ascended to the citadel, which is situated on the spur of a hill, we looked down upon the splendid panorama beneath us. Immediately under the walls was a vast piazza, bounded by low, flat-roofed houses, from amongst which rose at one side of the square a majestic mass of masonry, surmounted by a dome, and relieved by two lofty minarets of unequal height. The whole square was filled with rejoicing Orientals, in their many-coloured garments; every shade of every colour was to be found amongst them; and as they swayed to and fro, they resembled, more than anything else, a bed of tulips agitated by the breeze. It was the occasion of the *Itte* of Sultan Hassan, and all Cairo was assembled in the vicinity of his mosque—the fortress-like building that adjoined the square,—which was that of Roumel. Beyond the piazza was an interminable series of small white squares—the flat roofs of houses—intersected by dark lines of shade, which marked the courses of the tortuous *souks* or alleys, for few of them deserve the name of streets. Here and there were roofs of a domical form, those of the *hammams*, schools, and other public buildings; and the whole was relieved by the elegant outlines of stilted domes and by the graceful minarets, which caught the sun's rays, and reflected them from every face of their honey-combed corbellings; and from their pierced and tracered balconies beyond this glittering mass, there appeared to be a vast lake,—for it was the period of the inundation,—in the midst of which the course of the Nile could be here and there traced by the palm-trees on its banks; while through the mist, caused by evaporation, were to be seen the dim outlines of the Pyramids. Such a view as this is seldom forgotten. Everything we saw was Oriental in character. At Constantinople, Italian palaces and hybrid Gothic churches break the spell, and recall us to the plots and intrigues of Frankistan; but here the Frank quarter is so distant that we saw no formal rows of modern houses, nor black-coated gentry riding on donkeys, to remind us of the grooves and trammels of European civilisation.

Whilst in the citadel we visited the mosque and tomb of Mehemet Ali. We were, however, disappointed with this specimen of modern Egyptian architecture. The plan is good, being that of a square with a semicircular apse on each side, and the materials of which it was constructed were of the richest, the columns being of marble, and taken from ancient buildings, and the walls, to a certain height, being lined with darkly-veined Oriental alabaster; but the details are rococo, the coloring is tawdry, and the general effect that of coldness and dreariness, which one perceives in the modern mosques of Stamboul. The rich carpets and pendant lamps alone relieved it. Had the founder been content to take for his model one of the numerous mosques that lay in the city under his eye, he would have left behind him a work that would have been the admiration of posterity; but it seems that it is not in England alone that full appreciation of truth and beauty has passed away.

The mosque of Sultan Hassan, to which we, ascending from the citadel, elbowed our way, through a crowd occupied in watching rows of felt-capped dervishes swaying from side to side in measured time; past the stalls of vendors of sweetmeats, and immense swarms in which bearded Moslems, who in their amusements are but children, were taking great delight,—offers a fine contrast to that of Mehemet Ali.

We emerged from the crowded place into a narrow street, in which was situated the entrance to the mosque, and here we gazed up at its walls, which are 180 ft. high, built of alternate courses of dark and light coloured stone and marble, and finished by a rich corbelled cornice of great projection. This mode of building in parti-coloured courses, which is common to all the Cairene buildings, and indeed prevails generally throughout the East, gives scale to a building, and at the same time a satisfactory appearance of solidity. The doorway is situated in an arched recess, 100 ft. high, reminding one of the three western arches of Peterborough Cathedral. It is reached by a flight of twenty or thirty steps. On entering, we found ourselves in a small chamber, in which were stationed the guardians of the mosque, who directed us to take off our shoes, and enveloped the shoes of a lady who accompanied us in pocket-handkerchiefs, as the very naturally objected to walk shoeless on the cold marble pavement; we then passed through a low winding passage and entered the body of the mosque, which may be described as a cube of about 115 ft., with the top off; that is to say, it was open to the sky. In each face of the cube was a vast pointed arch, about 60 ft. in span, opening into a square or oblong recess; one of these recesses was larger than the rest, and had two doors in the inner wall, which led to another square hall, the tomb of the Sultan. In the centre of the court was a large domed fountain for abution.

The effect of the whole was that of simple grandeur, arising from the vast dimensions of the arches. Passing a row of turbaned worshippers who were going through their prostrations, under the guidance of a *Mollah*, with as much regularity as soldiers follow their flegman, and who did not seem to regard the presence of a female in their holy place as a pollution, we followed our dragoman into the inner hall or tomb. This was a square of about 60 ft., lighted by windows at the sides, and covered by a lofty dome. The painting and gilding were faded, the ornaments crumbling to dust, and the whole had a dilapidated look, though it will be ages before the building itself can become an actual ruin, as the walls are generally 13 ft., and in some places 25 ft., thick. The windows which light the tomb are two-light, with circular apertures above them. They are set in trifoliate recesses. There is resemblance in these and in the windows of most of the mosques of Cairo to Gothic of the *Plaisance* period, which has become so much the fashion in England; and there is indeed much to be learnt from these fine specimens of Saracenic architecture by an architect whose mind has not been narrowed by exclusive study of one particular school. This mosque was built in the fourteenth century, and is of the later style, resembling the Byzantine. It was probably built by Sultan Hassan, during his lifetime, and was destined, like that of Mehemet Ali, for his tomb. In most cases the tomb of the founder adjoins the mosque, and has a dome. The mosque proper in Cairo has no dome, but a flat roof. Such is that of Toloum, which we subsequently visited. It consists of a large quadrangular court with arcades round it. On one side the arcade is five bays in depth, and separated from the court by a wall, thus forming a building similar to a basilica. This is the primitive type of mosque. When the impostor Mahomet built his first house of prayer at Medina, no doubt he took for his model the *Caaba* where his fathers worshipped, and after he had purified the latter spot and overthrown its idols, no doubt it became the mother of all mosques, especially as he taught that it was founded by Adam after the image of the house of prayer in the heavens, which he said was situated immediately above it. The plan was simple in the extreme;—a square enclosure, with

arades all round, and a small building in the form of a cube in the centre. Subsequently when the *Successors* took possession of Damascus and Jerusalem, they found models for their mosques in the Church of Constantine and the Basilica of St. John. Accordingly we find that all the larger and earlier mosques in Cairo are upon the Basilican plan, and that it is only those that were erected after conquest of the whole of Asia Minor had familiarised the Moslems with the Byzantine churches, after they had seen the greater advantage of the cruciform plan, and the convenience and beauty of the dome, which they thenceforth adopted as the characteristic feature of their architecture, that were after the Byzantine fashion. But the inhabitants of Cairo never took kindly to the Byzantine plan. With the exception of the mosques of Sultan Hassan and El Ghorre, and a few others of the sixteenth century, which are on the cruciform plan, all the principal mosques, such as Tolom, El Azhar, and El Hakeem, are built upon the primitive plan.

The Mosque of El Azhar is a Mahometan university; its spacious court, which is 250 ft. square, is divided into seventeen sections for the instruction of Moslems from Arabia, Persia, Turkey, Nubia, and elsewhere. At one end of the court is the mosque, which has eight ranges of columns, numbering, with those of the quadrangle, 350, most of them with ancient capitals and bases. The gate has two trefoil arches, exactly like thirteenth-century Gothic. We attempted to get into this mosque, but were repelled by the functional gates.

But it is not in Cairo itself that Saracenic architecture is to be seen in its perfection: outside the gates and at the sides of the citadel are two extensive cemeteries, and in the midst of these are to be seen, a mile or two from the city, groups of domed tombs, with mosques adjoining them, and minarets rising from their roofs in forms imaginable. These are commonly known by the names of the Tombs of the Kalifs and Mamelukes; and many of them bear the names of their founder, such as the Mosque of Kalit Bey, and that of Imam Chafel. Those on the north side of the citadel are the most numerous. They consist of eight or ten domes, supported by square columns, and with steep angles. These domes are all pointed, stilted, and bulbous in form; that is to say, they are narrower at the springing than a little above it, and they are all, more or less, decorated externally with ribs, lozenges, or arabesque patterns cut in the surface of the stonework. The minarets are of various forms, but most of them resemble those in the city, being some square below and octagonal above, with three or four corbelled galleries. On the upper stage there are small columns at the angles, and their summits have the termination like a pear with its stalk upwards. In the narrow streets of Cairo one has almost to break one's neck in order to get a sketch of the dome and minaret, but here they can be seen to the greatest advantage, and sketched without molestation.

Besides the mosques there are numerous buildings of interest in Cairo, such as the baths and hansas; but as there are no architectural peculiarities about them—the former consisting of a series of square chambers, lighted by bull's-eye in the domes, and supplied with hot water and steam *ad libitum*, and the other being merely arched or covered passages—we need not waste time in describing them. If the traveller should, after a few days, tire of Cairo, he can find his way, and should wish to be refreshed by a glimpse at green foliage and an image of civilisation, let him make an excursion to the gardens of the Khédive, at Schoobra. A pleasant drive of three or four miles through a magnificent avenue of over-arching cypresses and acacias will bring the gates of the palace of Schoobra. This he will not care to visit, for he will find he will find a collection of all the flowering and other shrubs of Egypt, and in the centre of all he will see a kiosk. If he be an optimist who believes in the civilisation of the Mahometans, he will be gratified to see the interior fitted up like a Parisian boudoir, and handsomely bound editions of Greek texts on a side table. If, however, he be accustomed to Eastern ways, he will only perceive in this a sign of that Oriental politeness which aims at pleasing the eyes of visitors, and will not be a whit the more convinced that civilisation is compatible with a belief in the Koran.

There are many other interesting excursions

to be made in and around Cairo. Boulak, the island of Rhoda, and other spots, may be visited without difficulty by any one who will trust himself to the guidance of a member of that institution of Egypt, the donkey-boys, and who will be content with the smooth phrases of Ginger Pop, Yankee Doodle, or Lord Dandyray. He will not learn much from his guide, but will be amused by his stereotyped English phrases, and will be able to amuse himself by observing the manners and customs of the Arabs, which he could hardly do if seized upon and lionised by an enterprising dromedary.

But if he should venture on an excursion to the Pyramids on donkey-back, as we did on gentle Ginger Pop, we counsel him not to go without the escort of that necessary evil, the dragoman, or he will be almost torn to pieces by the Pyramid Arabs, who never can be brought to believe that they have no backbone; beginning with politeness, they end with menace; and if they get a solitary traveller inside the King's Chamber, are not likely to let him get out without paying a king's ransom.

GLEANINGS IN GLASTONBURY.*

The wall arcades both within and without the Chapel of St. Joseph are designed with exquisite taste on a par with the beauty of their execution. Each shaftlet, no doubt a Purbeck monolith, is set upon a carved channel sunk in the wall behind. "The artist," says Mr. W. L. Gifford, "gives a thickness by providing a free space between the shaft and the wall, and at the same time enables the shaft to be set nearer to the wall." It is closeness and compactness, we would say, rather than lightness, that is aimed at and effected. The shafts carry round arch mouldings, which do not interfere, but rather interfere, their plain faces being continuous on the same plane, and confident also on the same, at the crowns of the arches, with the horizontal string-course under the windows. The arcade thus escapes any appearance of a mere surface application, and asserts a true organic articulation with the body of the building. The intrados of the arches carries the twisted zigzag so well executed and accurately divided, that the members exactly fit both the effective pointed arch between shaft and shaft, that is brought out by the arrangement of interference, and the segmental division that re-appears above. The flatness of these arch mouldings is in excellent harmony with the sobriety of projection that reigns in the pilastrial buttresses, the angle turrets, and the corbelled cornice.

The west front of the chapel, escaping all the confusion of buttresses, has a group of three round-headed windows, the central larger and taller, set symmetrically above the continuous series of arcade arches. There is an appearance, however, in the disintegrated ashlar below the central window, that the series of shafts, though not of the interfering arches, was originally partially divided by some architectural attachment—a niche or shrine.

The heads of these triplet windows appear to be either parts of semicircles, or rather, perhaps, describable as flattened semicircles. They are carried on forms of which the upper is called reeded zigzag, descending on shaftlets. The patterns of the sides differ from that in the centre, and it seemed to me that their places might have been with advantage transposed.

Already, on the exterior, we are struck—if we indulge the sentiment of art for a time, and leave aside the question of antiquity,—with a disarrangement which will obscure itself again in the interior,—a conflict of form between the round and pointed arch. It were futile to fall back upon obsolete speculations as to the origin of the pointed arch, from the interlacing of round Norman arches, but it were no less futile to ignore how the development of semicircular arcades evolved the forms of pointed arches, and so introduced of its own motion a discord that had all other influences held aloof, must necessarily have led—if ever the true sentiment of style were given to the world—to the ultimate predominance of the form that, other advantages apart, was susceptible of independence from its endless susceptibility of variation. The tallness and closeness of spacing of the shafts of the wall arcades cause the lines of their arches to intersect at a most marked acute angle, and this form is emphasized by the continued zig-

zag moulding of the meeting limbs on the same plane, while the semicircular outline of the extrados is left to be inferred among the coefficient mouldings, or intimated at most by an incised line. This effect is still further exaggerated in the still taller proportions of the arcades that ornament the free towers.

In the interior the intrusive form obtains all the additional force conferred by predominant magnitude.

To judge by the traces of the wall arches, the height of the interior scarcely extended from 30 ft. to 35 ft., and the vaulting ribs sprang from the abacus of a triplet shaft, ranging with window oills at about half this height. The chord of the diagonal rib of each archway, about 25 ft., seems, as nearly as possible, equal to the width of two series. The dimensions of the interior being thus:—Length, 60 ft. to 55 ft.; breadth, 25 ft. to 24 ft.; height, 30 ft. to 35 ft. These limits, which do not pretend to exactness, as taken from a diminutive plan, are quite near enough for our present purpose.

We regard it as certain that the diagonal ribs, the widest arches in the building, were true semicircles. Crossing, as they do, towards the centre of the wall, they necessarily intersect in a point; and the vaulting ribs, which commence again from the same level, and have to reach the same height from the same level, must necessarily meet in a point; the vista down the chapel, therefore, from end to end, gave over the section of a pointed arch, no less than the transverse aspects, and the outline of this arch remains again upon the western wall, enclosing in its large sweeps the triplet round-arched window. The diagonal ribs, with their chink mouldings, and transverse ribs, is much more important, and bears a bold combination of rod zigzag upon a semicircular core between pairs of smaller roll mouldings on either side. The vista of pointed arcuation was thus defined with the greatest force.

The pointed arch has thus by its spontaneous evolution, and as if apart from design, and to the fatal detriment, indeed, of the style which has led up to it, acquired irrevocably the upper hand; it has only to invade the windows, which are still at present exempted through inveterate tradition, for the victory to be complete. It might, however, have been long indeed before this last step was taken, but for the influence of bolder geniuses who dared to anticipate, to precipitate evolution,—by revolution. These are the men who seem to make opportunities, but, in truth, obtain their advantage by being ever expectant and on the watch for them; who not only catch sight of a new principle at its very first emergence, but who are gifted with imagination and courage enough to follow, to deduce, to recognize all that it implicitly condemns and abolishes, and much, if not at once all, that it postulates and promises;—men who are gifted, moreover, with the courage to press a principle at once to its uttermost consistent application, break with whatever tradition, set aside whatever authority they may. Many instances of this kind of genius, and the logical developments of the Gothic style; it were vain to exclude the Eastern influence from ecclesiastical architecture at the very time when the philosophy of Averroes was reacting with such vigour upon ecclesiastical study. So much the greater was the merit of those who welcomed materials from any quarter, but modified all in subjection to one vital principle which it was their glory to have divined. It was in France that the Gothic system was first truly harmonised, and it is difficult not to be struck by the contrast of the progress of the style as between France and England, and as in a degree characteristic of the nations.

The spirit of progress, and alive in both, but the spirit in one case is somewhat overwielded, and in the other, shall we admit it, the curb. Tenacity of precedent has here to be responsible for delays and incongruities that elsewhere are escaped in virtue of ruling avidity for novelty, albeit at expense of many a stumble. Of two competitors eager for advance, one will give up nothing without a compelling reason, and the other will retain nothing unless under compulsion. System is the first requirement of the one whatever has to be sacrificed; it may be no less the ultimate aim of the other, but the risk of sacrifices meanwhile, is sorely appreciated.

* See p. 31, ante.

In St. Joseph's Chapel, we see the round arch architecture fairly taken by surprise by the self-generated pointed arch, and the incongruous forms are left together with no attempt to relieve the incongruity. The architecture ought scarcely to be styled, as it usually is, advanced Transition,—it is rather a case of primary and frank Collision. When we pass to the remains of the abbey beyond, we still encounter incongruities scarcely less harsh; but this is no longer because the pointed arch is obtrusive in advance, but from the reluctance, the recalcitrance of the Norman style in its necessary retreat. In the happily preserved chapel of the north transept fully developed Early English details are associated with the toothed signposts of the Norman chapel in most elaborated combinations, very exactly worked, but not more out of harmony in outline than in excess of massive-ness relatively to the slender shafting; in the remains of the aisles, we see that if the pointed arch is adopted for the windows within, they are inclosed on the exterior (so the architect solves resolution) by a semicircular.

The architecture of the chapel of St. Joseph, no longer—in reality the *ecclesia ecclesie*, the church dedicated to the Virgin,—marks an era date most characteristically at the very crisis that transferred the rule of England from the Normans to the Plantagenets. The foundation itself was, doubtless, very ancient—as early as King Ina; at least; its importance is proved by the fact that the Saxon abbot of Glastonbury was one of the seven hostages that the Conqueror took with him on his first return to Normandy. His grandson, Henry II., after keeping the abbey in his own hands for some six years, laid the foundation of the new church in 1184. The direction of the work was committed to his camerarius, Radulphus, son of King Stephen. "He completed the church of St. Mary," says Adam de Domerham, "in the place where the beginning of the refectory of the *ecclesia* had stood, building it of squared stones of the most beautiful workmanship, omitting no possible ornament." This praise, both of ashlar and ornaments, is fully borne out by the remains; the Norman zigzag receives here almost its last developments in many variations and combinations of toothed and bent rod zigzag. The difference on alternate windows differ; among others are the ingenious examples that are introduced in the beautiful north porch of Wells, but there in union with Early English floriation, and surmounted by the exquisitely perforated drip moulding.

When we regard the broad contrast between Norman and Early English, we may be disposed to think that never was a transition so known and complete—transition which we add and some revile, as the Renaissance. When we pass and repass from the chapel at Glastonbury to the abbey, and to the cathedral of Wells, we may be sometimes disposed to think that never was transition more prepared and inevitable.

Whichever view we incline to we must recognise with admiration the architectural genius that carried through the change so rapidly, and, with whatever occasional hesitations and inconsistencies, to a point of such high comparative completeness at last.

In this last Norman work under the first Plantagenets, we have lively promise of the refined and elegant style that was imminent; we have, too, of a difficulty that in England at least was scarcely effectively surmounted. The work is very closely of the same date as the round church of the Temple in London, and when we compare the Early English church which was attached there, we cannot but recognise a sympathy where we would willingly have missed it.

At Glastonbury the height of the vaulting shaft does not exceed, perhaps does not even equal, the vertical height of the vault, and the general effect could not but have been that of lightness and openness, of heaviness and gloominess; the spring of the ribs so low down as from level of window sill necessarily brings the groins of the vault so much in front of the upper portion of the windows as to interfere with both the view of them from the end of the church, short as it is, and the diffusion of light.

We may also notice a carelessness of articulation on the side and end walls, which declares itself indeed often much more plainly in the Early English structures of very high pretensions. In the angle of the interior there is only a single shaft which receives the diagonal rib, and there is no trace over the triplet-window where the outline of the vault is inscribed,—of

any transverse, which would here be a wall-rib,—to correspond with the broad and boldly-moulded transverse ribs of the bays. The result is a failure of emphasis at an important juncture and termination where its requirement does, indeed, receive an acknowledgment, but quite illusory, in a slight modification of the base.

When the crypt was inserted in the fifteenth century within the lines of the foundation, as is so satisfactorily proved by Professor Willis, the pavement was raised to the level of the bench-table that carries the bases of the wall-arcade and vaulting-shafts; and thus the original defect of lowness was still further recklessly enhanced.

The flat pilastral buttresses terminate with an oddly-moulded attached final some distance below the external cornice. The point at which they terminate may have reference to their implied service to the vaults within; but their summit range with no visibly expressive line,—no feature that betrays such organic dependence; and, in the absence of any hint of reason why they went so far or stopped when they did, the effect is inevitably inconsequent and frigid.

Professor Willis says they end "with a corbel, which probably carried an image;" but this we seriously doubt.

The round recessed north door of the chapel has a roof-shield moulding above it, very depressed, and leaving the least possible vacancy between the crown of the extrados and the apex of the shield,—an intimation of the probable and commendable parsimony of vacant space between the lost roof of the chapel and the vault.

THE STRUCTURAL UTILITY OF IRON.

RECENT incidents cannot fail to awaken a certain degree of interest in architectural and engineering circles, apart from that which is associated with the fracture of the Holborn Viaduct columns. In accordance with the conclusions of those whose opinion in such matters is regarded as deserving every attention, it would appear that the perishable nature and properties of iron as employed in static engineering no longer forms the principal object to be considered in reference to its utility or value as a building material. The decay to which iron is exposed from atmospheric changes and by variations of temperature has long been within the knowledge of many, and more recently the transitional qualities which iron and steel have been observed to possess, have attracted more general recognition. The molecular aggregation and dissociation of iron have been demonstrated to such a point of clearness that the material may be said to be capable of being held in atmospheric tension more eminently, perhaps, than any other substance in building. In addition to this circumstance, the molecular capacity of iron is known to be such as to admit of essential changes of its properties and functions. The same bar of material would, in accordance with the varying conditions of its employment, exhibit all the features and elements of new and distinct substances. The freedom of motion to which the constituent elements of iron and steel are known to be susceptible admits of the presentation of various orders or classes of fracture in the same sample, and the nature of such fractures may be said to determine the practical limits of the adaptation of iron as one among the materials of construction.

The sudden fracture of railway-carriage axles is sometimes attributed to a change effected in the material by vibration. After submission to vibrator tests, a bar of fibrous iron has been observed to have completely changed, presenting a granular or crystalline fracture it may be; and it is equally possible that a crystalline or granular sample should, under certain conditions, acquire the properties and features of a fibrous specimen. The singular atrophy, or withering away, to which iron, under some circumstances, is liable, and the corresponding instances have been noted on the part of many at the base as well as in other parts of iron railings, may readily suggest itself. Although an incident probably in a measure now obviated, and comparatively of but little moment, such exhibitions, notwithstanding that they may be said to be capable of being effectually remedied, invite special observation on the part of those who may be led to widely extend the employment of iron in construction.

It might be unavailing, if not altogether devoid of interest, to single out the more trivial and fortuitous examples of the speedy decay to which the material under consideration is occasionally seen to arrive, but the total and

intrinsic degeneration of such a substance by its mere proximity to others, whatever the process through which such a result is reached, is a subject possessed of unequalled claims to investigation. In alluding thus prominently, it may be viewed by some, to what may be open to be regarded as the more unfavourable elements of this question, we would be understood as far from discountenancing the application of iron in a constructive direction. Many circumstances, however, we incline to think it would be agreed, contribute to indicate the necessity of some selection as to those conditions under which its employment would become more appropriate and effectual.

Upon the completion of many important erections in which iron is seen to have been largely employed it is by no means an infrequent occurrence to observe that opinions are in certain directions at once set in motion, to the detriment of the undertaking in many instances, it may be gratuitously, but in the general result uniting to diminish the assurance of the public with reference to the stability or safety of such structures.

It has upon some occasions unhappily proved too well founded that substantial grounds may have existed for some amongst the numerous deductions to which these speculations are likely to lead, while in other instances the conclusions which have been derived have been altogether disproved or shown to have been unfairly or unduly exaggerated.

It is a matter confessedly of such difficulty, even in engineering circles, to assume an unconditional responsibility with reference to some of the reputed properties of iron, that a tendency has declared itself on the part of those more intimately interested in that science in connection with which its structural use is so closely associated to endeavor to discover continually improving and more favourable modes of its application.

It is in this latter view of the subject probably which may be considered to possess more special claims to the notice of our readers, nor should it be omitted to be recorded that in entering into a more critical examination of what few would probably treat as altogether unimportant the modest pretensions which have been put forward on the part of the engineering profession are calculated to invite considerable forbearance, and may happily induce the supposition that the authority which age and experience can alone impart to the principles of any art or science may be expected to operate in its favour as it has done in many analogous instances.

Perhaps the most complete and authoritative inquiry which has yet been made with reference to the utility of iron for purposes of construction is that which was instituted some twenty years ago before the committee for inquiring into the application of iron to railways. Since the time at which those investigations were conducted, the theory of the structural utility of iron has sought to embrace such conditions, and the processes of the manufacture of that material have undergone such modifications, that in the future interests of architectural, no less than engineering, science, it would appear far from undesirable that some similar inquiry should now be established.

The important experiments upon the properties of iron and steel which we owe to Mr. Kirkaldy, and to which we had occasion to allude in a notice of Mr. Bladen Stoney's lately issued work "On the Theory of Strains in Girders and similar Structures," would almost of themselves suggest the wisdom of further legislative inquiry; for while manufacturers and public alike may appeal, in a certain measure, to the results of such experiments as likely to exercise a salutary check over the constructive application of the materials in question, it is the result of a purely voluntary and promiscuous system.

It may be fairly questioned whether the subjection, say, of the whole series of links of a suspension bridge to a fixed and arbitrary strain, is calculated to enhance the stability of such structures when erected.

Mr. Stoney, in stating that the functions and properties of iron become changed after its subjection to various strains, has recorded what has long been known before in a less determinate form. Whatever may chance to constitute those obscure qualities in iron and steel to which attention is attracted upon the occurrence of unexpected ruptures or disasters through the employment of those materials, it is obvious that they appear calculated to afford important

constructive facilities, and will always invite employment in some building capacity. It is of practical moment, therefore, to the architect to seek to bring under more critical examination the occasions of failure in either of those materials in their structural application. The fall of the Manchester Station roof, some two or three years ago, it may be remembered, was attributed to a flaw in some portion of the casting; while the more recent instance of the Caledonian Station has been laid to the account of a tie-bar giving way; and in the case of the Ludgate-hill Station, the accident was referred to the simple misplacement of a strut.

It is with no intention of imparting an undue importance to such incidents that we make reference to occurrences some two or three years old, but the integrity of an extensive undertaking, it may be in iron, has been so frequently traced to, and imperilled by, the giving way of some trivial support, or member of the general structure, that the circumstances may demand pointed observation in any further inquiries into the strength and adaptation of such materials. In reference to novel discoveries in static engineering and attempted improvements in the application of the materials with which that science is identified, it cannot but afford matter of congratulation to notice any instances where it may have been more clearly shown that undoubtedly successful results have been attained.

Although the extraneous successes of certain engineering experiments may be said to possess less interest in architectural circles than where it has been sought to import similar endeavours into the domain of architecture, it must necessarily be of interest to note those claims which are occasionally alleged upon special grounds, with reference to the allied arts of construction. Apart from the employment of iron, so obviously has the theory of engineering been necessarily founded upon certain of the principles of architecture, that some of the most important engineering circles wherever the distinctive element is more notably absent; and this it is which, in the opinion of some, might be held to shed light upon the assertion of an eminent member of the profession, that it has been very unsatisfactory to attempt to describe in a few general words what a civil engineer really is.

As an illustration of the more mixed elements upon which the art of construction in iron is yet based, reference might be made to the evidence which was given by Mr. Robert Stephenson before the Committee of Inquiry, upon the application of iron to railway structures. The report of this Commission is known to be still regarded as of high authority in engineering practice, and the circumstance may be noted with some pleasure, as indicating the undoubted progress which has been made since the time of the inquiry in the profession to which it relates.

Upon being asked as to his opinion with regard to suspension-bridges, and whether he considered them at all applicable to railways, Mr. Stephenson replied, "To a very small extent. I do not think, with the prospect of our weights increasing upon railways, that you can run a locomotive over any chain-bridge in existence."

We have already had occasion to advert to the opinions which have been derived by Mr. Edwin Clark as to the construction of suspension-bridges, wherein he expresses his belief that the erection of a suspension-bridge sufficiently rigid for the purposes of locomotive traffic would be tantamount to the construction of a tube. Mr. Peter Barlow, whose experience in the structural application of iron entitles his opinion to great weight, is at issue with Mr. Clark, and remarks that, "although unsupported by fact or experiment, Mr. Edwin Clark's theory has been received and acted upon, not only by a large portion of the public, whose impressions of suspension-bridges are derived from what had hitherto been constructed of insufficient strength and without being combined with a girder, but it had been received and acted upon by engineers of eminence in this country."

In the inquiry before the Commission to which we have alluded an important exception was taken by Mr. Stephenson in favour of a system of suspension bridge which at that time attracted considerable notice. The discovery invited such attention that Lord Western was induced to communicate at great length with Viscount Melbourne as to the superior applicability of the system to the repair or renewal of the Menai Bridge, deducing from actual experiments its merits in bridges of large span. This class of structure is known as Dredge's

Patent Taper Suspension Bridge. Lord Western observed that the inventor insisted on the possibility of reconstructing the ironwork of the Menai Bridge at a less sum than the superfluous iron would sell for, pledging himself to the power of the bridge if the iron was altogether altered, using Lord Western's words, and reconstructed on his principle, to be capable of supporting on transit 1,000 tons.

The main principles of the Dredge suspension-bridge would seem to be comprised in the employment of pyramidal suspension-chains, and the substitution of oblique for vertical rods for connecting the suspension-chains with the roadway. The invention of Mr. Dredge, with reference to the application of iron in the erection of bridges more particularly, was supposed to embody such important structural principles that, apart from the exception which was made in its favour before the Commission to which we have referred, it may now upon various grounds be found to possess further claims to practical consideration.

The Dredge principle is stated to have been founded upon the view that bridges are only bridges, and should be dependent upon their bases or abutments, and the strength of the material of which they are constructed, like the human arm, which depends on the shoulders, and not on the fingers' ends, or the limb of the oak, which is sustained by the larger part of the branch that grows from the tree, and not by the ends of the twigs at its farthest projection. Bridges have hitherto been made to rest on their centres, as beams in architecture, and hence the superfluous material in them, with the immense accumulation of leverage that exists on their centres, is the cause of their undination and destruction. In a common bridge, whose depth is one-twentieth of its length, and the weight 1,000 tons, the central forces are computed at 3,000 tons, instead of which no description of force or weight, according to the Dredge principle, should exist on the centre of the arch of any bridge, for it is but the extremity of two projections. The operation of the system is therefore in the direction of the annihilation of those static forces, which of themselves tend to destroy the structure, and to counteract which an excessive quantity of material must necessarily be employed, in accordance with more usual practice. One of the most important elements in connection with the erection of all suspension structures of the nature in view has been the acquisition, at the least cost, of the maximum rigidity, and to accomplish this various expedients have been suggested and employed. In the original suspension-bridge which existed at Hungerford Pier, in the line of the present Clarendon Railway, the lateral motion, as well as the deflection, of that structure under passing and unequal loads was remarkable. In that case, as in the present Hammermith and Obelisk bridges, the roadway was attached to supporting-chains by vertical rods; but in the substitution of oblique bars in the Dredge system, considerable rigidity was supposed to have resulted. A more special treatment of this element of bridge construction may be noted in Koch's system of suspension, a class of structure perhaps deserving of fuller notice than it has yet received; but the more conspicuous instance is that to be observed in the stiffening which has been imparted to the Niagara Railway Bridge by means of timber trussing following up the direction of the chains. This feature has been repeated in the new Bridge, iron being there, however, substituted for Mr. Barlow for the timber as employed in the Roching system. In most of the instances which we call to mind the metallic section of the supporting-chains has been uniform at any point along the span, nor do we remember any case of such singular deviation from this principle as that to be noted in the pyramidal chain-bridge. The attempted economy of material towards the centre of lattice girder bridges may faintly shadow out the principle involved, and we cannot resist the impression that an exaggerated view has been taken as to the possible saving of material as between the Dredge principle of suspension and others. Perhaps the most exquisite adaptation of iron to structural purposes—that is, in a useful sense—to which we may refer, is contained in the case of the Lord Obelisk and Dover Railway Bridge, erected at the crossing of the Thames and Blackfriars; but it seems unhappily possessed of fewer lasting elements than its present neighbouring structures.

The results of the experiments which were communicated by Lord Western to Lord Melbourne, upon the distinctive features of the Dredge bridge would appear well calculated to attract the attention of the scientific; but, as we have before had occasion to notice, the extreme divergence of views entertained by the more eminent professors of engineering detracts from the value or importance, in a measure, of individual conclusions. Whether greater triumphs may be derived from the application of wire cables, assisted by vertical and horizontal trussing by the system of pyramidal chains and oblique suspension-bars, or by the tubular system conjoined with chains, or in the form of tunnels, we would be indisposed at this moment to venture to predict; meanwhile attention is being attracted to more recent discoveries as to the structural application of iron and steel. Out of the mass of conflicting and antagonistic evidence with which the theory of engineering is obviously beset, it would afford matter of congratulation should some settled principles be evolved, and it is because we incline to the view that at length some tendency in this direction may be detected, that we would seek to bring under notice some few of the more striking features of that art.

INSTITUTION OF CIVIL ENGINEERS IN SCOTLAND.

The address of the president, Professor Macquorn Rankine, has been published: we take from it two or three passages:—

Sand Concrete.—It has long been known how greatly the execution of breakwaters, and other harbour works, and sea defences, is facilitated by the use of blocks of concrete instead of natural stones; because such blocks can be made of any size that may be required in order to resist the force of the waves. It has lately been shown, by the mode of construction used in the breakwaters of Port Said, at the northern end of the Suez Canal, that such concrete may be made of hydraulic lime and sand alone, without gravel or stones.

Ventilation.—A branch of sanitary engineering not less important than water supply and cleansing, is ventilation; but its difficulties and imperfections are in some respects of an opposite character. In the branch which deals with liquids and solids, we find that the supply of pure water is comparatively easy, while the removal of refuse involves matters of dispute and perplexity. In the case of ventilation, on the other hand, appliances for the removal of foul air are well known and extensively used; while the supply of fresh air, though in some cases efficiently provided for, is in other cases neglected; and there are too many instances of the latter class. We too often see large and splendid public halls, in which the most foul air has been most carefully planned and executed at various points of the roof, while the supply of air has been left to the casual opening of a door, or to the currents which the pressure of the atmosphere may cause to enter through drains and soil-pipes, or down disused chimneys. There are many exceptions, however, to this remark to be found in buildings where the supply of fresh air has been amply and skilfully provided; and the number of these exceptions is fortunately increasing. Care should be taken not to under-estimate the supply of fresh air required by the inmates of a building: experience has proved that each individual requires at the very least 20 cubic feet per minute, and that if possible he should be supplied with 30 cubic feet.

Engineering Education.—The movement which is now so active for the extension and improvement of technical education, is one in which the members of the various branches of the engineering profession are deeply interested. The objects carried out by those who promote technical education may be classed under four heads: providing materials of instruction, and providing scholars. A step was made by the Government about thirty years ago towards the providing of teachers of the scientific principles of engineering, by the founding of chairs of civil engineering and mechanics in some universities; amongst others, that of Glasgow. The efforts of the holders of those chairs met with partial success, until their teaching was made to form the conclusion of a systematic course of instruction in the various sciences bearing on engineering. After that systematic course had been established, the students steadily increased in number, diligence, and ability. More recently much

has been done to increase the number of teachers; and I may mention, as specially worthy of honour, the establishment by the Government of the Royal School of Naval Architecture and Marine Engineering; the contributions of the inhabitants of Manchester towards the endowment of Owen's College; and the foundation, in the University of Edinburgh, by Sir David Baxter, with aid from the Government, of the most liberally endowed chair of Civil Engineering in the United Kingdom. As regards the provision of buildings, I know of no instance of munificence to be compared to that of the inhabitants of Glasgow and its neighbourhood. The amount of their subscriptions to the fund for the new University Building, taken together with the Government grant and with other resources, has enabled that building to be executed on a scale which will provide most ample and convenient accommodation for the engineering department, as well as for other branches of study, which have hitherto been conducted, in the old College, under great disadvantages as to space, light, and air.

The objects which give the most important aid to instruction in engineering science are those examples of materials and workmanship which are to be seen in actual structures and machines. Nevertheless, a good collection of specimens of engineering materials would be of great service in connection with the engineering department of a university; and so also would a collection of models, drawings, and instruments, though less important than specimens of materials.

It is only necessary to name to you Sir Joseph Whitworth, in order to remind you of the magnificent endowment which he has provided for students of mechanical science and practice combined.

It is evident that the value of scientific education to engineers is at the present day justly appreciated, and that the means of obtaining it are being rapidly extended, and indeed are in many cases promoted with enthusiasm. Just as in every similar case, in which a good object is earnestly pursued, there are errors against which it is necessary to guard. One is, to expect results too quickly, and to be impatient of gradual which it is not really capable of accomplishing. The purely practical parts of engineering, such as the use of tools and the superintendence of work, cannot be soundly and thoroughly learned except through experience in real business; and it is a mistake to endeavour to teach them during a university course. The true laboratory for students of engineering science is to be found in the workshops of such cities as Glasgow, and amongst the earthwork, masonry, carpentry, and ironwork of engineering structures in progress.

THE EARLY YEARS OF RAILWAYS.

MR. VIGNOLLES'S ADDRESS.

We quoted in our last a portion of the address delivered by Mr. Chas. B. Vignolles, F.R.S., as President of the Institution of Civil Engineers. It contains so much that is valuable that we are tempted to make some additional extracts:—

Passing over intermediate years, let me come to my proper task and attempt to recall some of the memorable chain of occurrences, in the earlier days of the railway system, when that grandest improvement among the many ameliorations of the first quarter of this nineteenth century began its earliest struggles for general adoption. It is to the courage and enterprise of the mercantile and manufacturing communities of Liverpool and Manchester that we owe their introduction, and benefits such as we have enjoyed during the last forty years.

The trade to and from the port of Liverpool had long been outgrowing the existing means of inland carriage. The two great carrying companies, popularly known as the "Duke" and the "Old Quay," had provided it with water transports during three-quarters of a century, as, for a shorter period, had the "Leeds and Liverpool Canal," and the many wagoons along the rough and high roads implied the road conveyance. But it may readily be imagined that, with the rapid increase of commerce consequent to the close (in 1815) of our long series of wars, all of them were insufficient.

When the first steam-engine had only been erected in Manchester in the year 1790, not a power-locomotive had been introduced until twenty years later, and the population scarcely 400,000; while the port tonnage and population of Liverpool were small—when the first casual importa-

tion of eight bales of American cotton in the year 1784 was so strange that it was seized by the Customs officers, under the conviction that it could not have been the produce of the country which the invoice stated it to be; the trade of both towns was unimportant compared with that of 1825, by which time Manchester had 150,000 inhabitants, 300 steam-engines at work, and 30,000 power-looms employed; then dock-dues at Liverpool were paid by 10,000 vessels, the population was 135,000, and upwards of 400,000 tons of cotton were imported yearly; goods in transit between Liverpool and Manchester equalled fully 1,300 tons daily, besides upwards of a million tons of coal carried annually into those two towns. Thus the aspect of commercial affairs had totally changed, though the means of conveyance remained unaltered and unimproved: hence arose vast pressure and enormous sacrifices to ensure speed and certainty in the delivery of goods. This could only be done by land carriage, sometimes at enormous cost. Some remedy was imperative, some competition indispensable, and the inquiry became necessarily limited to the form in which it should be devised and applied: it was not long before deciding that the remedy should be by means of a railway.

Railways, though rude, had existed in the coal countries on the Tyne and the Wear for 200 years previously, but since the beginning of the present century they had improved and multiplied rapidly, but were still only short isolated private undertakings, appropriated exclusively to the transit of coal. In 1822 the first public railway for goods, coals, and passengers was proposed between Stockton and Darlington: it was unsuccessful in Parliament from the opposition of the landowners and coal proprietors, but next century they had obtained. About the time William James, a London engineer, had suggested that such another railway to the mercantile men of Liverpool, to supply the great want of conveyance between Liverpool and Manchester, and James made the first actual survey. It was not adopted, but the idea was entertained and ripened. The water-carrying companies refused to reduce their tolls, the alternative of road carriage was impracticable, from its limited resources and great expense; but independent of tolls, the endless delays on the canals, the pilferage of the merchandises in transit, and the terminal obstructions from want of space, left no hope of improvement; and in 1824 the first prospectus for the Liverpool and Manchester Railway was issued, the appointed committee prepared their plans under the advice and direction of George Stephenson, and lodged them for application to Parliament in the ensuing session.

The anticipated strenuous opposition to the scheme was not long in becoming realised. The three bodies of canal proprietors, each in itself no despicable opponent, forgetting their mutual animosities and former disagreements, banded against the new rival formidable array, and the common league, organised under most skilful direction, upholding with tenacity their vested interests, claimed as rights; and prepared at all hazards to resist and crush down so intolerable an innovation on established modes of communication, and on their chartered privileges and long-maintained monopolies.

Two noble peers, Lord Selkirk and the great-grandfather of the present Earl of Derby (whose estates the railway crossed, and have since so vastly improved those belonging to the latter nobleman), made common cause with the canals to prevent the passing of the railway bill. It was battled during three months through the House of Commons. Every possible objection was taken. Imperfect plans, erroneous levels, interference with the canal mile distance, danger, expense, and incompleteness of locomotive engines, deficiency of estimate, impracticability, especially in crossing Chat Moss. One very eminent engineer affirmed that the probable expense of crossing that moss would exceed 300,000L, though the real cost was actually within 30,000L.

I should inform those of my hearers, who have not watched the different schemes which have taken place in the practice of passing private Bills through Parliament, that in these days committees on Bills, and even on standing orders, were open to every member of Parliament who chose to attend, were it solely for the purpose of voting upon the preamble or merely on a particular clause. The step for the first time in the history of the House of Commons, the Bill was carried by a majority of one only in the open

committee to which seventy-three members had been pressed. It must then have been considered hopeless to persevere; next day the clause, empowering the company to make the railway, was lost by a vote of nineteen to thirteen; the clause to take land was also negatived; the promoters then withdrew the Bill, and thus ended the first act of the great railway drama, which, even at the present day, is still far from being played out, although 100,000 miles of railway are now laid on the face of the globe.

Nothing daunted, the high-spirited committee, the very *élite* of Liverpool, called their parliamentary supporters together on the third day after the loss of their Bill, and, encouraged by them, resolved to persevere. And, hear it, my fellow-countrymen of Ireland, the most cogent argument used by the leading political men of that day who attended the meeting—an argument repeated in the new prospectus of the railway—was, the benefit which the railway would produce, directly and indirectly, to the agricultural interests of Ireland, a benefit I can testify from personal knowledge, and experience, has been most abundantly realised; and, considering that it was an argument brought forward five-and-forty years ago, there is good ground for maintaining that the best interests of Ireland were then, as now, quite as much cared for as those of Lancashire.

It happened that I had returned, some two years previously, from occupation on the continent and in North America, both civil and military, all connected with engineering, copying repeated absences from this country. Having watched the few railways then made, or making, I was fortunate in being selected by Messrs. Rennie to take charge of the new surveys, which the Liverpool committee immediately ordered under the direction of some eminent engineers. But the opposition of canal owners and land proprietors had become redoubled; and it was in the course of carrying out this duty that I was brought into contact with the celebrated Mr. Bradshaw, the devoted trustee under the remarkable will of that Duke of Bridgewater who employed Brindley to make the canals, and had charged Mr. Bradshaw with the sole and absolute control of the Duke's large estates, for the benefit of his future heir, which he exercised for nearly half a century.

I was brought up before Mr. Bradshaw, at Worsley Hall, on a pretended charge of night poaching and trespassing; for I was often obliged to make surveys and take levels by moonlight and torchlight, so strict was the watch kept by him, by order of many landowners to prevent engineers from completing the necessary plans and sections. Mr. Bradshaw had contrived to earn himself a terrible name for severity, but I found him a gentleman. My only reason for recurring to such a mere personal adventure is, that some not unfriendly discourse passed between us on that occasion, which I communicated to the Liverpool committee. This led, I have good reasons for believing, to communications which, before the end of 1825, ended in those arrangements by which the then Marquis of Stafford, for himself and those of his family who were ultimately to benefit in the profits of the Duke of Bridgewater's canal, took 1,000 shares in the Liverpool and Manchester Railway Company, with the privilege of nominating three of the directors, arrangements confirmed by the company's first Act of Parliament.

On the 25th of September, 1825 (I note the special date) the Stockton and Darlington Railway was opened for public traffic. The surveys for the new railway between Liverpool and Manchester, commenced in the July preceding, were completed and lodged in November: then public attention awakened to such projects, and early in 1826 the Bill was again introduced into Parliament, under less discouragement. The opposition, however, though not so compact as was as ever, and the passing of so important a measure required every effort, every precaution, on the part of the promoters. The leading counsel opposing was the late Baron Alderson, next to Sir E. Pollock, and man of science then at the Bar, prompted in his crucial examination of engineers by your esteemed president, George Bidder, then as well known for his marvellous power of mental calculation as he has since been as a scientific and practical engineer. Few of my audience will be disposed to infer, judging from his subsequent career, that my old opponent Bidder was the formidable enemy of the railway in its first Parliamentary warfare.

In spite of him, however, the preamble passed the ordinal committee, this time with a majority of 43 to 18. The third reading was opposed in the Commons by the illustrious Lord Derby lately deceased, then the Honourable Edward Geoffrey Stanley, who made his almost maiden speech in that House against the Bill, with all the ardour of his character; but on a division, the numbers were 88 in favour, 41 against. The struggle was renewed in the Lords Committee. One of the counsel for the railway was William Page Wood, then a junior barrister, now Baron Hatherley, Lord High Chancellor, and a very near neighbour of ours. On their last day of meeting in committee thirty-two peers were present, when the very old earl and his son-in-law, Lord Wilton, were the only dissentients. The third reading was carried without a division, though not without hostile speeches; the Royal Assent soon followed, and on the 29th of May, 1826, a general meeting of the subscribers was held in Liverpool, and the newly-appointed directors held their first sitting on the following day. Soon after George Stephenson returned to the post of engineer-in-chief, and the railway work commenced, and was vigorously pushed on for three years, until approaching near to completion, when it became necessary to settle the question of the motive power to be used on the railway.

It would occupy the time usually assigned to more than one address, were I to pursue the interesting record of the steps taken to solve this question; but I am not attempting an historical analysis—merely selecting a few reminiscences. I should have been very glad to have noted the proceedings known as the "Rainhill Experiments," having been myself present the whole time, in October, 1825, when the competitive trial of locomotive engines took place, ending in the grand prize being awarded to imperial judges to George Stephenson and Henry Booth jointly. It is from Mr. Booth's publication that I have been most unscrupulously abstracting. I will refer those who may be disposed to enter into details of such remote date to the pages of the Liverpool newspapers and the *London Mechanics' Magazine* of that period. Trustworthy, interesting accounts are to be found therein, and full justice done to my old friends, Braithwaite and Ericsson, whose engine, the "Novelty," was long remembered as the beau idéal of a locomotive, and which, if it did not command success, deserved it.

A great gathering of engineers from all parts was, of course, in Liverpool; and, as Englishmen are said not to get on well on important business without the aid of wine, the engineers gave on this occasion a grand banquet to the directors and officers of the railway, and to the competing locomotive engine builders. Of course speeches were made and healths drunk, and we toasted each other and everybody, except the waiters. Will you excuse me if I read from a newspaper report of our feast, (in the *Liverpool Advertiser* of the 12th of October, 1825), two short predictions of mine about railways. I had had the honour assigned to me of returning thanks for the toast of "The President and Institution of Civil Engineers," and what I said is thus reported:—

"Mr. Vignoles, as a member of the Institution, returned thanks for Mr. Talbot, to whom, as the constructor of many of our most important works, the toast was due. His (Mr. Vignoles's) first step in life was as a military rather than a civil engineer; and as he was deputed to propose a military toast, he might profess it by some anticipation of what steam would be, in a military point of view. Supposing such a general as Napoleon were in effect a leading civil engineer, with a sword and a powerful arm, and that he were ever to be victorious upon his landing, armed as this country is shortly to be with railroads and locomotive engines, brief would be his triumph; for by return of post, as it were, parks of artillery and the whole military force of the country could be poured upon him, without even the fatigue of a march. Mr. Vignoles concluded with giving 'The Master-General of the Ordnance and Corps of Royal Engineers.'"

And a little later in the evening, having had to propose the health of the three indices of the locomotive competition, I stated, as reported:—

"Being engaged in laying out a railway between Goulton and Barnsley, he (Mr. Vignoles) hoped to see that accomplished and made part of the union between the two sides of the kingdom, and that it might put it into the power of that part of the country to supply the metropolis with the article coal, at present furnished through sea transport by the great northern proprietors, whose monopoly, he trusted, would then soon be put down."

As regards my latter prophecy, my friends taking them either in alphabetical or geographical order, Barlow, Cubitt, Fowler, and Harrison, have now pretty well realised what I intimated about bringing coal into London by railway, though they only began some twenty-five or

thirty years after it was first thought about. Still it has been most effectually accomplished. In respect, however, of what railways would be able to do, in case of the momentary success of an enemy invading this country, I have to remark that that one of the earliest duties required by the War Office, after the establishment of our Engineer and Railway Volunteer Staff Corps, was to point out the means by which, in the event of such a disastrous occurrence, the railways could practically protect us; and the answer we returned went to the effect of demonstrating that within forty-eight hours after the alarm had been sounded, the whole military force of the country could be poured down upon the enemy, on whatever coast the invading forces might land, without, excepting in a few limited cases, the fatigue of a single day's march. I would have asked our illustrious honorary member, Field-Marshal Sir John Burgoyne, (whom I hope I may be permitted to call old friend (whose illness, I regret to say, has alone prevented him from doing us the honour of being present this evening), but in his absence I appeal to the Inspector-General of the Royal Engineers, Sir William Gordon, whom I am proud to see here, whether our replies were not complete and satisfactory, and whether what was thought at the time to be the mere boast of a dreaming enthusiast, is not now ready for realisation at any hour—though God forbid that that hour should come, even though it found us fully prepared, as forty years ago I ventured to anticipate we should be.

I am thus led to a subject which I had intended to mention previously, but here seems the most appropriate place. The civil engineers, as a body, were first so called by Balldor, to distinguish them from the military engineers. It may be readily understood, however, in how many cases the military professional operations would partake of the civil elements. On such occasions, when appealed to, as in several recent instances, we have always been most willing to give our military brethren any advice and assistance in our power, as has been repeatedly acknowledged.

But now a new era is coming upon us, which will bring us much more in connexion with the military service. First, by the organisation of our National Volunteers, in which we, as engineers and artisans, have largely participated, to the movement our professional skill; and secondly, in consequence of the general extension of railways, and the recent introduction of the new powerful arms and implements, none of which have been as yet subjected to any regular fully-developed system, even in the most recent wars but which will necessitate increased influence of engineering in military operations, the future condition in which we, as civil engineers, including the most eminent of our body, are making our best efforts to develop; and we have the satisfaction of finding these efforts appreciated by military and naval officers of the highest distinction and experience.

I need scarcely say that a year or two before, and of course, immediately after the opening of the Liverpool and Manchester railway,—the attention of the public generally had been drawn to the new system of locomotion; a number of projects were brought forward, and many more were in contemplation, especially a railway from London to Birmingham, and another from Birmingham to Liverpool; for amalgamation had not then become the order of the day. Among others was a plan for connecting London and Paris by railroad, viz. Brighton (or, rather, Shoreham) and Dieppe, the latter as a transit but then deemed so objectionable, considering the distance between the two capitals by this route was the shortest by sixty miles.

A powerful combination of capitalists was formed, and soon after the change of monarchy

which placed Louis Philippe on the throne of France, I was sent over to negotiate for a concession in the French dominions. I had the honour of several interviews with his Majesty; the celebrated statesman, Thiers, then Minister of Public Works, was sent to England, and soon after M. Le Grand, his Under Secretary of State, came over. I had the honour of escorting them once after the other through the manufacturing districts and along the railways, some of which I was constructing, and I thought I had convinced them both of the advantage which the railway system would be to France.

After some considerable time occupied in inspecting everything which I thought most likely to interest these two chiefs of the Public Works of France, and conveying them over road and railway at a pace at which I am sure neither of them had ever moved before, M. Thiers took leave of me in a speech full of compliments and polite phrases, which I will attempt to paraphrase in plain English:—"Mr. Vignoles," said the accomplished statesman, but bad discriminator, "I am infinitely obliged to you, and I think you a very clever fellow, but, do you know, I did not believe a word of what you told me before I came, and now I cannot see the great advantages you were constantly dwelling upon. You have good canals—but very small, and ours in France are much superior. As for your roads, they are very good, but I have not met a merchandise wagon on them in the whole of my journeys. I do not think railways are suited to France.—And as to your wanted posting, we go quite as quick in France." Perhaps this last remark was not so much wondered at, for M. Thiers had insisted on bringing over to England his own heavy lumbering vehicle, quite à la Louis XIV., with immense lamps, like the old Paris reverberators, at the four corners on the top of the coach, which carried heavy Imperials, and eight or nine persons in and out, requiring six horses most of the way.

M. Thiers returned to Louis Philippe, and reported against the introduction of railways. He made violent speeches in his place in Parliament as Minister of Public Works, adverse to them, and the benefit of railways to France was postponed for eight or ten years, of which M. Thiers has been repeatedly and sharply reminded by his political opponents, when lamenting his short-sightedness. But his deputy, M. Le Grand, was somewhat more reasonable. He left a staff of young engineers to study our system of road-making, and it was copied closely in all the new roads subsequently made, and the Macadam principle of repairing was adopted; and, in fact, from that period the roads throughout France have been changed, greatly for the better. I cannot but acknowledge that the way in which roads in that country are now kept up is superior to our own—especially as regards our mode of forcing good horses and light carriages to grind down broken stone. In France they keep many of the roads clear from mud in winter, and from dust in summer; and where road materials are scarce and dear, they find a great economy in doing so.

More politicians called upon to consider and judge of engineering naturally fall into error which, if excused, cannot be easily forgotten; but what can we think, or rather what ought the engineers of France to think, of a system which placed at their head a statesman, who, virtually, robbed them of the glorious opportunity of doing for themselves and their country what, after years of injurious delay, fell into the hands of English engineers and capitalists, the becoming the first practical introducers, on a large scale, of railways into France? A system, which, in my judgment, notwithstanding many advantages, hangs like a dead weight on the talent, genius, and invention of that country.

STATISTICS.

1868-69.	United Kingdom.	France.	Prussia.	Spain.	United States of North America.
Railways (English miles).....	14,347	10,302	8,693	8,331	42,672
Detalled Roads (ditto).....	100,000	100,000	66,618	10,696	...
Canals (ditto).....	6,000	3,164
Telegraph Lines (ditto).....	23,165	25,890	13,891	6,992	...
Wells (ditto).....	96,104	42,000	18,265	15,265	...
Stations (No.).....	8,352	1,701	630	184	...
Post Offices (No.).....	17,741	5,609	9,948	...	35,380
Newspapers (No.).....	80,116,000	537,000,000	270,000,000	...	33,710,000
Post Offices (No.).....	105,845,000	381,000,000	270,000,000
Book Publishers (No.).....	122,510	210,640	139,675	198,061	2,801,000
Population (English miles).....	39,162,431	39,162,431	23,970,441	15,673,601	34,441,000

WHITEHALL AND VICINAGE.

THIS noble expanse, now extending from the National Gallery on the north, to Parliament-street on the south, is the most spacious, and, from its central position, the most important thoroughfare, or rather piazza, of the metropolis; and when extended as proposed, of equable width, as far as the Abbey, will open a view of ancient and modern public buildings of great effect, half a mile in length from Trafalgar-square. On the west side, after a range of twelve squares, important buildings continue the line to the corner of Great George-street, where the open church ground reveals the interior of the Houses of Parliament, and Henry VII.'s Chapel, the Abbey, and St. Margaret's Church. First, is the Admiralty, with a frontage of about 300 ft. The facade of this building is not very distinguished in architectural effect, save its open dwarf colonnade, enclosing a court-yard, and a pavilion with lofty columns to its retired front of red brick; the ornamental features but ill accord with the rest of the fabric, which is something akin to Obolena Hospital, or Hampton Court, a little modernised. The depth towards the park much exceeds the frontage, as there are grounds extending in the rear at least 300 ft. A red brick, a red brick, a red brick house, built on what, possibly, called the garden, front the parade-ground, and are occupied by subordinates of the Admiralty, extending as far as the houses in New-street, Spring-garden. The main body of the structure is, no doubt, capacious, but this department has much swollen since its first erection, and the lords have been obliged to acquire large detached establishments, and most expensive locations; too, in Pall-mall, Somerset House, Spring-garden, and elsewhere.

Seeing that all establishments connected with so important a branch of the public service ought to be in proximity with it, and that so palatial a site lies open at command, it appears strange that instead of raising offices at enormous rates suitable buildings have not been erected on their own ground. A building subsidiary to the Admiralty, if placed there, might correspond with the range of Foreign Offices on the opposite side of the parade-ground; a back window of the existing building, although screened from a park view, might have sufficient reserves of light and air for ordinary officials; whilst the new structure would afford even better woodland views, and would also stand out to the parade,—thus affording scope for all the ramifications of the Admiralty. Our readers will remember plans for the union of offices on this site which have appeared in these pages.

Next in sequence on the Whitehall east street line comes the Army Pay-office, a stack of the old, quaint, packed description; it is about 100 ft. in frontage, without an obvious portal, but having two entrances, one at the end next the Horse Guards, pre-eminence in the front wall and under the window line; the other through an angle or porch on the Admiralty frontage! The whole structure must be at least 250 years old.

The Horse Guards follows next in street line. This building was commenced in 1751, and was designed by Kent; its aspect from the park is certainly better than the complicated variation, or confusion, as it may be well it, displayed on the frontage. It occupies a small site, along the pavement, and as this, too, is inadequate to the service in our times, perhaps the conversion of the Army Pay-office into a subsidiary department for the Horse Guards might be the best mode of redressing a necessity, and at the same time adding a redeeming feature to the aspect now beheld from the banqueting hall opposite.

The fine mansion of Lady Dover follows; the front hall, portico, and screen wall, filling up the distance of 140 ft. between the Horse Guards, and the new Privy Council Office, and extending rearward to the park.

In close juxtaposition with Dover House, the Council Office completes the line, in a range of 315 ft. to Downing-street. The interior of this Classic pile is vastly superior to offices of earlier foundation, so in architectural effect it far surpasses them, as also in solidity, internal adaptation, and finish.

The remainder of the street line from Downing-street to Great George-street will be occupied by the levelling range of new Government and Foreign Offices, and, as to the park frontage, now completed, nearly the whole way to Storey's gate,—viz., to Charles-street. The facade to Parliament-street, which is to be widened to

the Council Office line, will add fresh dignity to the continuous piazza.

On the opposing side of Whitehall there is but one public building of any pretension, but that one, the Banqueting House, gives importance to the whole range; and the Duke of Buckingham's mansion and open court, together with Richmond-terrace, lend to it an unusual dignity.

It may be added, that Hubert de Burgh built the Palace of Whitehall, A.D. 1242, since which it continued to be the most valued site in London. Afterwards, in 1248, it became the urban residence of the Archbishop of York, until in the reign of Henry VIII., that monarch, A.D. 1530, erected a magnificent gallery, decorated by Hans Holbein, for the purpose of viewing tournaments performed in the tilt-yard, which occupied the present site of the Horse Guards and the parade-ground, the whole extent of St. James's Park being then open to view.

In the reign of James I., Inigo Jones was commissioned to design, A.D. 1606, a plan for a new palace, "in place of the old rotten slighted building Banqueting House." The length was to have been 1,152 ft., and the width 874 ft. The plans were designed and drawn, but of the building only a sketch, if carried out, must have been a lasting monument to the fame of the architect, the Banqueting Hall alone was erected.

There is a great blot on this vicinage,—the state of filth and waste of Scotland-yard, and the whole range between Whitehall-place, Hungerford station, and the Embankment. It has produced a feeling of desolation in the minds of the people, so that a decision is come to as to the intended bridge across the Thames, whether the piles and coffer-dams for three piers, which have impeded navigation for many years, shall be removed, or the works carried out.

THE ARCHITECTURAL PUBLICATION SOCIETY'S DICTIONARY OF ARCHITECTURE.

We are glad to believe that the completion of the Dictionary is now fairly assured.

A final meeting of the subscribers was held at the House, in Conduit-street, on the 19th of January; Mr. T. H. Wyatt, in the chair.

Mr. Arthur Cates, the hon. secretary, read a report from the committee, which congratulated the members on the complete discharge of all debts and liabilities, and the possession of a cash balance of upwards of £500, available for the production of the Dictionary. The result of the exertions made to obtain new subscribers, so as to secure the completion of the Dictionary, was reported as having been attended with remarkable success, only sixty-seven names being now required to fill up the list; and as new adhesions were still coming in, the committee recommended the secretary to authorise the immediate undertaking of the work of completion, relying on the continued exertions of the members to secure the additional subscribers still required.

The Chairman said he need trouble the meeting with but few observations on this matter. They all felt the great importance of completing the Dictionary as far as it could be got, and he felt great honour to the profession, though he felt in common with them all, that the great share of labour and responsibility had fallen upon two or three gentlemen. The work having gone to the length it had, it would be a great pity it should now lapse for want of a little individual energy on the part of the subscribers. Considering that in round numbers 100 new subscribers had been obtained since the annual meeting last May, it would be hard indeed if, in the course of the next twelve months, they did not obtain the additional sixty-seven required to complete the list. He would at once put down his name for an additional copy.

After some conversation, the following resolutions were then unanimously adopted:—

1st, That the continuation of the Dictionary of Architecture be at once proceeded with in such a manner as to secure its completion at the earliest possible period; and that the hon. secretary of the Dictionary be requested to superintend, as before, the production of the text.

2nd, That the work as produced be issued.—

A. To all subscribers now on the list, whose subscriptions to December 31st, 1869, shall be fully paid up on March 1st, 1870. All in arrears at that date to be considered as having withdrawn, and will thus lose the advantage of obtaining the completion of the Dictionary of Architecture without further cost.

B. To all subscribers who may have paid up the fees in full, for which they will immediately receive all of the Dictionary thus far published.

C. To all new subscribers who, under special arrangement, are paying up gradually the subscriptions for past years, so soon as the payments made by them shall amount to fifteen guineas.

D. To all new subscribers who may have elected to pay the subscription by instalment, so soon as their payments shall amount to fifteen guineas, they in the meantime receiving parts of the publication already issued, equivalent in value to the sum so paid.

4th, That on each part of the publication be marked a price, calculated at rates, based on the cost, at which the preceding parts have been realised, at which price the parts may, at the discretion of the hon. secretary, be issued to persons wishing to complete sets, and to whom the foregoing paragraphs do not apply.

5th, That this meeting pledges itself and the general body of the members, to use every exertion to obtain the subscribers still required, and to aid and support the committee and officers in carrying on the undertaking to a successful issue.

The Chairman said extraordinary energy had been displayed by three or four gentlemen, and since the annual meeting;—an instance of that he mentioned that Mr. Corson, of Leeds, had recently gained not less than eight new subscribers; and Mr. William Burn had used his influence greatly to the advantage of the society. Accessions to the list had also been made by the exertions of Mr. Abbott, of St. Andrew's, Glasgow, Mr. Horace Jones, Mr. C. F. Hayward, Mr. D. C. Nichol, and many others. A little more energy in the early part of the present year, he was quite certain, would result in the completion of the subscription list to the point fixed upon; and he had no doubt the committee would have the pleasure of announcing before the next annual meeting that the list was complete. It was happy to say that several of the large builders and contractors had recently become subscribers, and in some cases a copy was subscribed for by the individual members of firms.

Several members having expressed the strongest hopes with regard to the speedy completion of the subscription list and the immediate continuation of the publication,

Cordial votes of thanks to the hon. secretary of the society (Mr. Cates), and the hon. secretary of the Dictionary (Mr. Wyatt Papworth), for their past labours, and those which they had promised for the future, were passed unanimously. Mr. Sydney Smirke said he could not allow the opportunity to pass without bearing his personal testimony to the great services rendered by the hon. secretaries. He had seen so much of them in this matter that he could truly say they had been the pillars of the concern, and their labours, intelligence, and common sense, and their fatigable exertions were beyond all praise, and he thought it was due from all present to thank those gentlemen in the strongest way they could.

A discussion ensued as to the means of expediting the production of the work and the mode of properly recognising the services of the hon. secretaries, and a vote of thanks to the chairman closed the proceedings. Friendly exertions are still required.

THE NEW EAST WINDOW IN CHRIST CHURCH, NEWGATE-STREET.

THERE is no subject upon which it is more difficult to pass a final judgment than upon a stained-glass window. No strict canons of criticism applicable to all styles have yet been fully accepted, by any appeals to which the capricious appliances of taste and fashion have been ill-informed taste can be silenced. How far it is allowable, or even expedient, to abandon a conventional for a naturalistic treatment? How far may perfect transcendence be sacrificed for the sake of pictorial effect? At what point does the picture exposed in glass degenerate into a mere transparency? What modulations of treatment are rendered necessary when stained glass, whose birth-place was the Gothic cathedral, is transferred to a Renaissance or modern Grecian church? Such are a few of the reflections consequent upon an inspection of the new window placed in the eastern wall of Christ Church. Before, however, saying a word about the window itself, let us remind you of the window which has led to its creation. We are delighted to hail one more instance of the intelligent interest which the guardians of our City churches now take, not merely in their preservation, but also in their adornment. Churchwardens and vestries vie with, often even urge on, the clergy in the path of improvement. Whatever may be the merits of the window, let us at least let us give credit to the committee under whose auspices the work has been brought to a happy conclusion, to the liberality of the treasurer of St. Bartholomew's and Christ's Hospitals, and

to many of the chief parishioners. Nor must Mr. Hardwick go without a special word of praise for time and thought given to the cartoon.

The subject is appropriate in the church of Christ's Hospital. Our Lord Blessing the little Children presented to him. The chief figure is seen issuing from beneath a richly ornamented gateway, on the sides of which appear in slobes six of the cardinal virtues. On the one side, Faith, Hope, Charity; on the other, Justice, Fortitude, Chastity. In the mouldings of the arch are medallions containing the heads of the four Evangelists. The uncoloured glass (we cannot call it white) of which much of the architectural part of the design is executed is valuable partly redeeming the whole from its obvious fault—a certain sombreness of tone which prevails throughout. The central group is well composed, and the legitimacy of the pictorial style on glass being admitted, its treatment is deserving of praise. The figure of our Lord is majestic; the two apostles in attendance on our Lord, the women, and the children, prove that the artist has studied carefully, and profited by his study of the old masters.

Our criticism would be suspicious if it contained no element of blame; and we do not, therefore, scruple to repeat our regret at the low level, so to say, in which the colouring of this central group is struck. We regret it the more because the window, except to a person standing immediately under it, gets none but reflected light. This aggravates the evil.

In saying so much, we would be understood rather as giving advice which may be profitably followed hereafter, than seeking to detract from the praise due Messrs. Heaton, Butler, & Baynes for their principal share in the production of this window.

THE DRAINAGE AND WATER SUPPLY OF BUENOS AYRES.

A LAW empowering the Government to carry out a project of Mr. John Coghlan, M. Inst. C.E., F.R.S., for the drainage and other improvements of the city of Buenos Ayres, was recently before the legislature of the country, and there was every reason to believe would be passed. The scheme for water supply is nearly completed, although Mr. Coghlan has additional works to carry out. As for the drainage, Mr. Coghlan has gone upon the model of our great city drainage systems; and, indeed, he consulted Mr. Basiletti and Mr. Bateman on the subject, as well as on our own plans, of which he has made good use in his report to the local government.

He proposes a system of irrigation in connexion with the drainage, and points out the land proposed to be used for the utilisation and deodorisation of the sewage before it is allowed to pass into the river. He suggests the introduction of brickwork and other approved machinery and materials, the erection of limekilns, &c., for the execution of the drainage works. The total cost of the drainage works Mr. Coghlan estimates at \$98,746l. The total cost of the water supply, including the money still required to complete the works, to supply 3,000,000 gallons daily, is 164,000l., of which 55,000l. constitute the cost of the works already done. Street improvements, 178,571l. bring up the total cost to 941,317l.

THE EASTER ISLAND STATUES.

EASTER ISLAND, to which we have recently drawn attention,* was the subject of a paper at the Geographical Society on Monday night, read by Mr. J. L. Palmer, R.N., of her Majesty's ship *Porpoise*. Mr. Palmer described the topography of this remote island in the South Pacific. As our readers know, it is a part of the ocean far away from other islands, at a distance of 2,000 miles from the coast of South America, and 1,000 miles from the nearest Polynesian islands to the west. The island is entirely a volcanic formation, and presents numerous extinct craters, one of which yields gray lava, and another the red tuff, from which are carved the crowns or hats that formerly rested on the heads of the figures. The present inhabitants are only 900 in number. They belong to the Polynesian race, and have a tradition of their immigration from Opari at no very distant period. The interest attaching to the island was an ethnological one, and con-

cerned the race who sculptured the vast quantity of stone images now existing *in situ* on stone platforms in various parts of the island, or inside large stone chambers or houses. The platforms, chambers, sculptures, and mural paintings were described by the author, but he did not propound any theory as to their origin. He stated that the inhabitants knew nothing of the matter; that they were undoubtedly of great antiquity; and that it was probable they were executed by a race who had long since passed away.

In the discussion which followed, Mr. Markham mentioned the fact of similar images having been found by the early Spanish invaders in the cities on the banks of Lake Titicaca, in South Peru, and belonging to the Aymara nation. There existed, however, this difference—that the Aymara images were profusely sculptured. Recently a stone platform had been found in one of the Pacific Islands, 1,000 miles to the west of Easter Island, at the bottom of a deep deposit of guano, and he threw out the suggestion that these were all relics of a very ancient people who slowly migrated across the Pacific from west to east. Mr. Franks gave in detail his reasons for concluding that the ancient remains in Easter Island truly belonged to an earlier population of the same Polynesian race who now inhabit the island. Sir George Grey also expressed the same opinion, and spoke of the habit of carving images as being a peculiarity of Polynesians, including the Maories, and that in a place where wood (the usual material) was very scarce, as it is in Easter Island, it was natural that stone should be substituted.

PRINTED OR WRITTEN.

Two students write.—Will you kindly inform us whether or not it is correct, in affixing the names by hand to plans in block letters, to speak of them as being printed?

* It is incorrect, though the expression is common enough. If our young correspondents will recollect that the root of "to print," is *premo*—I press, they will see the reason why. To print is to form characters by impression.

ART-UNION OF LONDON.

In the year 1868, the council of this society offered a premium for a series of partially shaded drawings, illustrating some work of a British artist or events in British history.

Thirty-five sets of designs, of various degrees of merit, being sent in, the premium was awarded to a set of twenty, illustrating Canon Kingsley's story of "Hereward, the Wake," and these were found to be the work of Mr. C. E. Buxton, an artist well known for his outline illustrations of "Pilgrim's Progress," his historical picture of "The Surrender of Calais," and for works from time to time exhibited on the walls of the Royal Academy.

The designs set forth many of the chivalrous deeds and heroism of the hero. He, the last of the English, as the author calls him, betook himself to the forest country on our eastern coasts, when the field of Hastings had given England to William of Normandy, and there, with a band of devoted followers—a kind of prototype of Robin Hood and his merry men—be for a long time set at defiance all the attempts of the king to capture or kill him. At length, after various turns of fortune, partly in desperation, and partly induced by kind messages from William, Hereward determined to go down to Winchester, and become "the king's man." He was received with much kindness and consideration, and lived for some time in great honour at court; but, ultimately, through the envy or jealousy of some of the Norman knights, a plot was formed for his destruction, and he was ruthlessly killed.

All these matters the facile pencil of Mr. Selous has depicted with much spirit and a great deal of fine drawing, though, as usual in such cases, there is not always the same amount of power displayed.

The work has been very faithfully rendered by the burin of Mr. C. G. Lewis, and the twenty plates, bound in a volume, will form the society's presentation work for the current year.

Whoever has read the story will certainly be anxious to secure these plates; and whoever sees the plates will want to read the work; while whoever pays his guinea for a ticket for this year's distribution, will certainly have more than

his money's worth, independently of the chance of a picture or other prize. The advertisements announce that the volume will be out on the 1st proximo.

SCHOOL OF ARCHITECTURE.

WHILST the education of the architectural student is under consideration at the present time, it will, perhaps, be a matter of pleasant interest to some of the elder members of the profession to have recalled to them their past efforts in search of academic tuition; and to the students of the present day, the following recital of an attempt to gain that tuition, though unsuccessful at the time, may tend to give encouragement during their own efforts in the same course. It is very satisfactory to see that nearly all those whose names occur in the accompanying list raised themselves to eminence in the profession in London, or in the provincial towns where they subsequently established themselves. Only about ten of the then students are still alive. The originals of the four papers, formerly in the possession of the late Mr. C. H. Smith, are now preserved in the collection of the Royal Institute of British Architects.

WYATT PAPWORTH.

(No. 1.)

"No. 8, Bloomsbury-square."

February 25th, 1817.

Architectural Students' Society.

Resolved:—

1. That this Society have to regret that no public school has been formed in this kingdom for the promotion of architectural students' studies,—a measure highly necessary for the advancement of the art.

2. That the Royal Academy, being the establishment appointed for the promotion of the sister arts, painting, sculpture, and architecture, the Architectural Students' Society regard that institution as the parent of their art, and the most proper place for such a school.

3. That it appears to this Society, as the most probable method of attaining the desirable object, that it would be expedient that the architectural students of the Royal Academy in general should petition the president and members thereof, requesting them to form a school of architecture.

4. That the secretary is desired in the name of the Architectural Students' Society to write to the architectural students of the Royal Academy, enclosing these resolutions, and requesting their attendance (at a general meeting of the architectural students) in order to give their opinion and support to the same.

5. That, in accordance with a list as possible of the architectural students of the Royal Academy be immediately prepared, printed, and enclosed in the circular.

6. That the costs of printing, those attending the use of the room, and all other expenses incident to this business, be defrayed out of the funds of this Society.

LIST OF THE ARCHITECTURAL STUDENTS OF THE ROYAL ACADEMY.

Acton, —, Wilton-street, Finsbury-square.
Adams, Joseph, Portsmouth.
Ainger, Alfred, 25, Everett-street, Russell-square.
Ainslie, John, at Mr. Seward's, 39, Green-street, Strand.
Alderson, James, Chelsea.
Alexander, Daniel, Greenwich.
Alexander, John, at Mr. Seward's, 39, Green-street, Strand.
Allison, Thomas, Westbourne Green Cottage.
Angel, Samuel.
Archer, Richard.
Bailey, George, 274, High Holborn.
Bailey, James, Faraday-row, Lambeth.
Bassett, George, Home.
Baxter, J.
Bedford, F. R., Southampton-street, Bloomsbury-square.
Bosby, Charles, correct.
Brooks, William, 55, Doughty-street.
Clayton, Alfred B., Gray's-in-square.
Cooper, John, at Mr. Seward's, 39, Green-street, Strand.
Donaldson, T. L., 6, Bloomsbury-square.
Dowd, William, at C. Smith's, jun. Esq., Albany.
Edwards, Frank, 9, Salisbury-street, Strand.
Himes, James, Camden-row, Somers Town.
Foyler, H. B.
Forbes, John, 18, Robert-street, Bedford-square.
Gardiner, J. B., Wornwood-street.
Gasky, F., Newman-street.
Gearing, Thomas, at Mr. Seward's, 39, Green-street, Strand.
Goldstick, John, Home.
Halderon, —, at Mr. Atkinson's, 50, Brentford-street, Maidenhead.
Hardwick, P. jun., Berners-street, Oxford-street.
Hawkins, W., 6, Lower Brook-street, Grosvenor-square.
Haycock, Robert.
Inwood, —, 3, Southampton-place, New-road.
Jones, John, Ireland.
Kincaid, John, jun., Home.
Laurie, William.
Leachman, John, 18, Robert-street.
Lee, Thomas, Barncliffe, Derwentshire.
Lee, T. jun., 43, Deodar-street, Queen's-square.

* See p. 10 for illustrations; cf. ante.

Legg, George, 254, Oxford-street.
 Lochner, William, 30, Coleman-street.
 Malton, Charles, Barton-street.
 Martin, Thomas, Gray's-inn-square.
 Matson, C., Mr. Hay's, 12, Bedford-street, Bedford-square.
 Mead, J. Clement, 34, Charlotte-street, Fitzroy-square.
 Merikham, E. B.
 Meredith, M.
 Milbush, George, 41, Green-street, Grosvenor-square.
 Nicholson, M. A., Titchfield-street.
 Osborn, Robert.
 Paine, G. R., 1, Diana-place, New-road, Fitzroy-square.
 Paterson, Samuel, 4, Holborn-court, Gray's-inn.
 Phillips, G., Wandsworth-road, near Vauxhall Turnpike.
 Potts, W. at Mr. Chesser's, 12, Guildford-street, Brunswick-square.
 Pordeu, W. Junr.
 Purser, William, 4, Benet-street, Blackfriars-road.
 Pritchet, Joseph.
 Smith, C. H., 5, Portland-street, New-road.
 Smith, Charles, 9, Upper Seymour-street.
 Taylor, T. junr., Warr-street, Richmond.
 Thomas, M. E., 74, Margaret-street, Cavendish-square.
 Trench, John, Shrewsbury-street.
 Tyrrel, Charles, Guildhall-yard.
 Upward, J. William.
 Wilkney, Lewis.
 Wilkes, Robert, 29, Leigh-street, Barton-crescent.
 Willmetts, T. junr.
 Wrocker, John, 35, Upper Norton-street, Fitzroy-square.
 Wyatt, Henry.

R.B.—Those who have an asterisk (*) affixed to their names are members of the Architectural Students' Society.*

(No. 2.)

"No. 8, Bloomsbury-square, February 29th, 1817.
 Sir,—In consequence of the numerous resolutions, passed at the last meeting of the Architectural Students' Society (the 25th instant), I have to request that you will be pleased to favour the members with your attendance on Friday evening next, the 7th of March, at the Public Room, No. 66, Pall-mall, near the British Gallery towards St. James's-street, in order to give your opinion and support to the same.

Your assistance will be given on producing this letter, or your student's ticket, at the door. The doors will be open at half-past seven, business will commence at eight o'clock precisely, and at that exact eight the doors will be closed.

I have the honour to be, sir,

Your most obedient servant,

T. L. SMITH, Secretary.

Note.—In consequence of the impossibility of procuring a correct list of all the Architectural Students of the Royal Academy, it is requested that those who may be written to will have the goodness to communicate the accompanying resolutions to such of their friends as are Architectural Students, whose names or residences are omitted in this list, and request their attendance at the meeting; they will be admitted on producing their ticket.

(No. 3.)

"To the President and Council of the Royal Academy.

We, the architectural students whose names are herewith affixed in behalf of ourselves and the other students of the Royal Academy, respectfully beg leave to solicit the attention of the president and council to this our petition, and humbly request that they will be pleased to take the prayer into their serious consideration.

Since the first establishment of the Royal Academy, instituted under the auspices of our most gracious Sovereign, for the promotion of painting, sculpture, and architecture, various schools have been formed for the improvement of the students in the several branches of the two former arts, from which they have received great and manifold advantages. We beg leave most gratefully to acknowledge the benefits which we also have derived from this institution, for we hope and trust the president and council will be pleased to extend to us in our art, advantages equal to those which the students of painting and sculpture in theirs at present enjoy; and, conceiving that it would not only tend to the advancement of the art, but would add to the reputation of the Royal Academy, we venture to petition the president and council that they would be pleased to form for their students a school of architecture, and allow them a further extension of the use of the library.

We presume not to offer any suggestions on the requisites for such a school, but leave it to the liberality and discernment of the president and council to render the object desired worthy the institution, and suitable to the dignity and importance of the art.

We trust that the president and council will be pleased to regard this expression of our wishes as joined with sentiments of the utmost deference and respect.

Signed by—

(No. 4.)

"8, Bloomsbury-square, December 1, 1817.
 Sir.—The members appointed by the Committee of Architectural Students to wait on Mr. Howard with the petition to the Royal Academy, have received the following answer of the President and Council, which I am directed by the Committee to communicate to you,

I am, Sir,
 Your obedient servant,
 C. H. SMITH, Secretary.

* Royal Academy, July 10, 1817.

Gentlemen.—The petition of the Architectural Students in the Royal Academy has been laid before the President

and Council; and I am desired to acquaint you that the President and Council, viewing it as a proof of the ardour which the Architectural Students feel in the pursuit of their art, have received it in good part, and will give it such situation as the general circumstances of the establishment will allow.

I am, gentlemen,
 Your obedient humble servant,
 (Signed) HENRY HOWARD, R.A., Secretary.
 To Mr. George Bailey.
 Mr. Thomas Lee.*

ARCHITECTURAL EDUCATION AND THE DIPLOMA QUESTION.

NORTHERN ARCHITECTURAL ASSOCIATION.

This president for the year of this association, Mr. T. Oliver, delivered his opening address at the last meeting. We print the concluding portion of it which relates to the subjects at the head of this notice—

I am well aware of the difficulties, and even the disadvantages, that attend the establishment of an architectural diploma; but these, as in the case of both the legal and the medical professions, may readily be overcome, or even turned, as in the instances referred to, to the well-being of the public.

This is not a new subject to me, and, therefore, I am prepared with the outline of a scheme for the occasion; and I base this scheme on the mode of procedure that was adopted in the enrolment of the legal and medical professions by the then governments of the country, and which occurred in this wise. About fifty years ago, the legal profession was in a somewhat similar position to our own, with this exception, that while any one could practise, it was necessary to be admitted on what was termed the "roll"—a merely local matter, and quite a matter of form,—a sort of manuscript directory, indeed. On the application of the examination test, however, a serious question arose; and that was, What is to be done with the present practitioners? That question was settled on the principle,—all members of the profession whose names were upon the roll were admitted as attorneys, while all those seeking for admission had to undergo the examination.

In the case of the medical profession the same principle was applied as had been found to operate so successfully, only a few years previously, in regard to the legal profession.

In the year 1815 all persons in practice at that time became legalised practitioners, and could receive a diploma by merely applying for it; all subsequent practitioners to that time, however, were required to pass an examination at the Apothecaries' Hall, and latterly elsewhere at our medical colleges, universities, &c.

Now, my scheme for an architectural diploma is this.—Let the Royal Institute of British Architects obtain an enlargement of its charter, giving it power to bestow a diploma on all architects who are in actual practice,—as architects only,—not to architects and builders, not to architects and engineers, but to architects who practise architecture only,—say in the year 1870,—while all future applicants would be required to undergo an examination, graduated year by year,—say for three years, not longer,—the test-standard being advanced each year, until a thoroughly scientific curriculum was obtained. The details of this scheme could be filled up, as the details of those were which I have already mentioned, and which have been altered, enlarged, and improved from time to time as necessity and common sense appeared to require.

The only sound argument that I have heard urged against such a course is that it might prevent those who are qualified by undoubted genius for the profession, but who, owing to neglect in their education, were incapable of passing the ordeal of such an examination as would be required of them. And such a case is insisted upon by the architect of that beautiful and remarkable monument of Scott, which is to Edinburgh what the Arc de Triomphe is to Paris. Such instances, however, are so rare that they are not called upon to legislate for them; and, besides, I question if the man who could produce such an immortal design could not easily work himself up through an examination; for genius is power of mind, and he who can devise great ideas of himself can readily appreciate and learn the ideas of others. But admitting that he were not qualified, as in the case in point, he would have to secure the help of others in the event of any great success, as was actually done in this instance; for, if I mistake not, Professor Cockerell and other London architects were called in as consulting architects, and who not only greatly modified the construction of this

structure, but also improved it in some aesthetic respects. But just as bone-setters, hydropaths, quasi doctors, and others of the present day,—many of them doubtless men of decided talent,—evade the law in the public benefit, so could our genius do, and, under such circumstances, we should all be glad to see it done.

The advantages that would follow a diploma far outweigh the disadvantages, whether real or imaginary. A scientific and technical education would be the result; confidence would be increased, both in the practitioner and in the public; the public would have a control over "sharp" practitioners and empirics; the expansion of the inescapable and the unworthy would naturally follow; and last, though not least, the works of the architect, being designed and directed by educated thinking beings, would become works of art to "all ages and generations of men."

If we put our shoulders to the wheel, we may carry the diploma as rapidly as the events of the day are being carried on around us, whether we look at the Church or the State, or to our social relations. This, probably, like many events of the present day, will be accomplished by a coup d'état.

The acquisition of a diploma necessarily implies a compulsory examination; an examination implies a certain amount of information; and a system of architectural education which will readily supply this information has yet to be established. And this can only be secured by the combined action of this Association with other similar bodies throughout the kingdom. Indeed, this is one of the great movements of the day; and for some years now this society, along with others, has been giving its attention to it.

Education is unquestionably a personal matter. Every separate individual must acquire it for himself. There is no royal road to learning.

But the education I refer to must not only be general, but it must be technical. And here do not let us confound ourselves with terms. We are too apt to have floating ideas of the meaning of terms, and it is only when a forcible thinker or an eloquent speaker puts these ideas in plain language and logical form that we fully realise them; like many indistinct things, which, as by the light of a sunbeam, form themselves upon us when placed in plain and naked outline, and we wonder that we had never seen, though we had often felt them before.

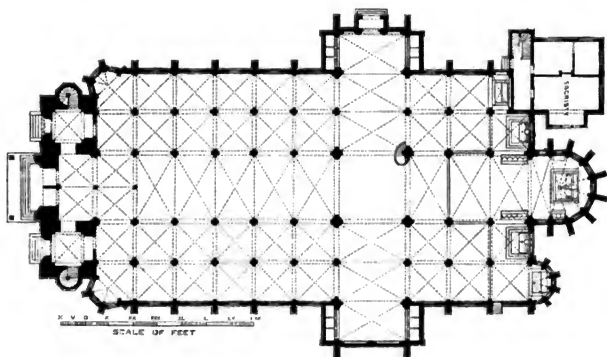
Now what do we mean by a technical education? The term "technical," Webster says, is that which is not in common or popular use. What, then, do we require that is not in common or popular use? What should an accomplished architect know?

Before referring to those subjects required to be known by an architect, and not in common or popular use, I must refer you to those that are. Writing is one, but how rarely is it good; spelling is another, and how seldom this is correctly given; and arithmetic is another. The English language, with a knowledge of Latin and Greek, and perhaps French and German, are the educational accomplishments now in common or popular use.

After the architectural student has acquired a good knowledge of English, he ought to apply himself to the study of language to this extent. Take the dead languages. He ought to have such a knowledge of Greek and Latin as would enable him to divine the meaning in architectural or archaeological subjects, by the structure, origin, or derivation of the term. So much of our own language, and so many of the technical terms now in use, are derived from these sources, that it behoves the student to become tolerably conversant with them. Take the living languages. French and German are now the most in vogue, and for this, as well as for the additional reason that very valuable works in these languages have recently been published, he ought to become sufficiently acquainted with them to enable him, at the least, to read with fluency; and as travelling has so much to do in forming the taste and judgment, he ought to be able to make known his wants and wishes through these media.

Now for the technical. Premising that the architectural student necessarily becomes an accomplished geometrical draughtsman, and acquires an intelligent knowledge of the etiquette and routine of professional practice in the office of his principal, his special educational curriculum must embrace,—

First.—Drawing, in the more advanced forms, such as freehand, for the filling in of foliage



ST. BARBARA'S CHURCH, BRED A.

Plan.

and ornamentation; model or figure, for the arrangement and grouping of statuary and sculpture; perspective, for easy illustration of his daily duties; and "hand-sketch" drawing, for the sketching of buildings, mouldings, what are called "bits," and for help in rapid designing. Indeed, he ought not to rest satisfied until he can sketch a building so accurately as that the respective proportions shall be relatively the same as if laid down geometrically to a scale.

Second.—History: the history of architecture; of all architecture; of art generally, embracing the schools of painting, sculpture, and perhaps music, with the history of his own country in particular.

Third.—Mathematics, embracing a knowledge of algebra, geometry, mensuration, and general arithmetic. Practically, an experience in calculating areas and cubes, squaring dimensions by duodecimals, and a capacity of applying algebraic or arithmetical formulae, are about as much as the architect will care for carrying about with him, unless his forte lies in this direction. The mathematical and the artistic are so inimical, the one being the practical application of a rule, the other the inspiration of free, original thought, that I should not lay much stress on great proficiency here. An artist friend of mine never could add up pounds, shillings, and pence, but he had a remarkable eye for gorgeous colour. I do not by any means wish to undervalue this study. It is an essential portion of study, and like logic, if it teaches you nothing, it disciplines the mind.

Fourth.—Design. The architect must be able to express his thoughts in drawing, just as the author expresses his thoughts in writing. They are but different modes of communicating to others what we ourselves feel. No one can design until he understands certain æsthetic laws; these laws, I confess, I am at a loss to express, they are so subtle. But they are seen in all works of art, are felt to be in nature, and are spontaneous and intuitive in the breast of the artist. This power, together with a knowledge based upon observation and experience, as well as that of book-learning and memory, will enable a man to design. A knowledge of the details of each style is, of course, essential to success; and the feeling above referred to is greatly enhanced by the study of executed works, in this and other countries, by travelling, and by discussion and reading.

Fifth.—Construction. A sound knowledge of construction is of the utmost value to the architect. Here, his mathematical attainments are called into operation; but as mathematical formulae and constructional data are based upon experiments or observations amounting almost to facts, an experimental comprehension is of far more value, in the multifarious instances of ordinary practice, than a mere collection of formulae, valuable as these unquestionably are. Now, to my mind, construction is best taught by lectures, and it is best taught by illustrations of failure. No man can correctly tell by abstract calculation what the thickness of a tower foundation wall should be, with given height and span, unless he is previously acquainted with the ordinary rules as applied in practical operations.

Sixth.—I must now group the remainder of the technical subjects required to be known by an architect, not in common or popular use, with just a word or two upon them. He must be acquainted with chemistry as applied to ventilation, sanitary matters, and certain classes of building materials; with geology, as applied to stone, clay, foundations, and also to certain classes of building materials; with acoustics, as applied to the relative sizes of lecturing and concert halls, churches, chapels, and other public structures; with mechanics, hydraulics, surveying, and levelling; with the principles on which valuations are founded; a knowledge of building materials in their application to specifications; and lastly, he ought to be able to take out the quantities of one of his own designs, for the sake of the essential good that the practice in doing so would do him for his lifetime.

Such are the technical studies to which an architect must devote himself under ordinary circumstances. But if he should have a forte for any particular branch of study, to this forte let him by all means direct his attention.

ST. BARBARA'S CHURCH, BRED A, HOLLAND.

THE new church of St. Barbara, in Breda, the opening of which we noticed in the *Builder*, vol. xxvii, p. 691, is one of the most remarkable examples of the revival of ecclesiastical architecture in Holland. The style chosen by the architect, Mr. Cuypers, is First Pointed, of that plain and rather severe kind so common to Belgium and parts of Holland. The plan of the church con-

sists of a western porch; two western towers, flanking the nave; a nave of six bays, with four aisles; transepts, each three bays deep; a choir of three bays, also with double aisles; and a sacristy of two narrow bays, terminating in a five-sided apse. The east bay of each of the four choir aisles forms a chapel, and has its separate altar. The high altar stands upon the "chord" of the great apse. The choir is fitted up with stalls and a rood-screen. There will eventually be three spires, two at the west end and one over the crossing of the nave and transepts; at present, however, the western towers are only carried up to a level with the apex of the roof of the nave.

The interior of the church is very striking, the whole building being vaulted, and the number of columns and arches seen at once give picturesque perspective effects.

A very remarkable feature in the interior of this church is the large triforium, equal in height to the arcade of the nave. This triforium is used as a gallery, and extends over the two inner aisles of the nave and chancel. Above this triforium is a clerestory, lighted with rose windows. It seems to us that this clerestory is scarcely important enough for such a large church; however, we must, in justice to the architect, allow that he could point to many ancient examples of churches in the north of Germany, where the clerestory is treated in the same way.

The whole church is built of brick, with the exception of the window-tracery, the columns, string-courses, &c., which are carved out of a stone called *Saxenwre*. The steps and lintels of the doorways are of Belgian granite. The vaulting is filled in with brick called *Ysfleton*; the ribs are of stone. The cost of the shell of the building, exclusive of foundations, towers, and all carving or decorative work, was rather less than 15,000*l.* in English money. Of course, it must be remembered that materials and time are cheaper in Holland than in England. All the carving, the capitals, sculpture, &c., were executed in the workshops attached to the architect's offices at Roermond, and carried out from his own designs and under his direction. The same may be said of the stained glass and all other decorative portions of the building which could be executed separately.*

* In mentioning the opening of this church in our last volume, we were led to call it St. Catherine's instead of St. Barbara's.



ST. BARBARA'S CHURCH, BREDA, HOLLAND.—MR. CUIJPERS, ARCHITECT.

VALUE OF GROUND RENTS IN LONDON.

On Tuesday last Messrs. Foster sold, at the Mart, freehold ground rents (for terms of eighty years), with reversion to rack rents, created by the Metropolitan Board of Works in New Southwark-street. They amounted to 2,505*l.*, and produced in twenty-seven lots 68,000*l.*, at prices varying from 26 to 33 years' purchase, or an average of nearly 27 years. We give the details of some of the lots:—

1 House, shop, and appurtenances, a <i>Ground-rent</i> of Messrs. Daniel Hudson & Son	£30 0 ... £780
2 Mercantile premises, on the south side of the street, near Gravel-lane	105 0 ... 2,730
3 Ditto, adjoining eastward the preceding	60 10 ... 1,730
4 Mercantile premises, in the occupation of Messrs. Waite & Co.	101 0 ... 4,540
7 Mercantile premises, adjoining the preceding, in the occupation of Messrs. Daniel Hudson & Son	65 0 ... 1,840
11 Mercantile premises, on the north side of the street, the corner of Essex street	80 0 ... 1,300
12 Mercantile premises, adjoining the preceding	80 0 ... 2,430
13 Premises, adjoining the preceding, in the occupation of Messrs. Peter Lawton & Sons	106 0 ... 3,530
14 Mercantile premises, on the south side of the street, the corner of Warwick-square	100 0 ... 2,400
15 Ditto, on the north side of the street, the corner of Essex street	82 0 ... 1,430
19 Mercantile premises, on the north side of the street, in the occupation of Mr. W. V. Wright	110 0 ... 3,070
20 Ditto, in the occupation of Messrs. Dalton & Motley	140 0 ... 3,600
23 Mercantile premises on the north side of the street, adjoining eastward the preceding, in the occupation of Messrs. Price, Dunn, & Co.	75 0 ... 2,030
24 Mercantile premises, No. 11, Essex street, on the south side of the street, in the occupation of Messrs. Patten, Smith, and others, boy-leathers	85 0 ... 3,490
26 Mercantile premises, No. 15, Essex street, on the south side of the street, in the occupation of Messrs. Patten, Smith, and others, boy-leathers	165 0 ... 4,790
27 Premises of the Alliance Bank, the corner of Southwark-street	530 0 ... 12,550

NOTES OF MISCHIEF.

Old readers of the *Builder* will not find anything very new in the leading idea of Professor Tyndall's important lecture on "Dust and Disease," at the Royal Institution, which has justly received much praise and attention. Take one passage written years ago:—

"How can the atmosphere—invisible, tasteless—convey these impurities? it has been said that the ordinary light which exists between the brightest sunshine and darkness, the atmosphere seems, so far as appearance goes, pure and harmless. When the sun shines, however, through narrow channels, into this seeming void, the motes in the sunbeam show that the atmosphere is anything but transparent; countless myriads of particles of matter are constantly floating in the atmosphere, and entering the lungs of young and old. Here, then, is palpable evidence of the necessity for care. The semi-opaque nature of the air we breathe is evident; and far smaller particles, which the eye cannot see, are constantly rising from the surface and floating around—germs of disease, emanaries of death.

In ill-ventilated streets and back yards in a similar condition, on which waste water is allowed to remain and saturate the soil, when the drainage from cesspools also further pollutes the earth, exhalations fill the air, and poison the system of those who are unfortunate enough to inhale this important necessity of life so adulterated. Those who live in the cleanest and best-ventilated houses in the metropolis, have noticed the fact that the large quantity of one day covers tables, books, and the surface of every object, form the idea of the large quantity of these floating atoms which enters the month, both during day and night, at every respiration.

Dust on the walls and floor of a room in which tobacco has been smoked is swept up, and then carefully packed away, on examination, after some time, it will be found the tobacco-smoke is still in the air. The ordinary hangings, carpets, and other fabrics will absorb the gases thrown off by tobacco, sulphur, and similar matter. In this way the bad gases entering the room from the adjoining rooms, or from drains, pervade and lodge themselves to a considerable extent on all surrounding objects, and poison those most exposed to them by the sunbeam and wind, and even when the bright sunlight does not make them visible, are still surely performing the covering-covering work, although in sleep at rest, and in the morning, on the moors and marshes, the mists, showing the never-ceasing operations of nature, glisten in the sunshine, there is a difference between the whole atmosphere of such dust and that which arises in the houses of polluted cities, in the neighbourhood of crowded graveyards, in ill-ventilated assembly rooms, restaurants, and other places. The particles of dust loaded with fever and contagion are ready borne upon the breeze from ill-ventilated and bad places to those adjoining, and in this way, to a certain extent adulterate the better atmosphere. As may be gathered from the extent to which soot can be borne, it may be surmised that when the wind has blown from the right direction, we have often distinctly identified, in Belgrave and in parts of the City, the pleasant smell of new hay from the meadows on the north side of the City, in like manner dangerous miasmas are floated on the air; and this circumstance, together with the sight of the

motes in the sunbeam, ought to be a lesson to us that large masses of the poor cannot be expected with impunity, and should teach us that it is necessary to preserve the atmosphere from pollution."

GOSSIP FROM ROME.

A FRIEND writes from Rome:—"Two days ago I went out to S. Paolo's 'fiori le mura,' to see it in the midst of a lake about half a mile round the church. Of course it was not possible to get to the church, as the water was nearly 3 ft. deep. I do not yet know if the water got inside on to the beautiful pavement. My good patron, Cardinal Weld, made a successful effort to raise the floor 3 ft., so I shall be anxious to know the result. Foundations are now damaging all Italy; Pisa and Florence are great sufferers.

The great Exhibition is preparing in the east corridor of the cloisters of the Baths of Diocletian, S. Maria degli Angeli, where the cypresses stand. It is finely getting up—an immense circular saloon, with a colonnade to the centre, where a "piazzetta" is formed round the trees. This saloon must be of immense diameter, and is skylighted all round. As the Exhibition is to be eclectical in all its objects, I cannot conceive how its vastness will be filled. The mile of corridor is for sculpture: works from Rome's 'cinque centes' to modern times are to form the show. Veignagnon is the architect, but the constant rain has almost suspended the plan. Certainly everything this Pope does is splendid. The stained glass windows in S. Paolo are now complete, and are magnificent works of art, giving dignity to the building.

ST. LUKE'S WORKHOUSE.

The Guardians of the Holborn Union have received the sanction of the Poor Law Board to their proposal for adapting the St. Luke's Workhouse to the purposes of a hospital and infirmary for the sick poor of the Union, and to the alteration of the workhouse in Gray's-inn-lane for the reception of able-bodied paupers. It is intended at once to erect a large block of building to contain 450 aged and infirm women at St. Luke's Workhouse, according to the plan prepared by the architect to the Union Mr. Saxon Snell, and which plans have received the unofficial approval of the Poor Law Board.

The proposed buildings at St. Luke's are estimated by the architect to cost 14,000*l.*, inclusive of architect's commission, fittings and fixtures, and all other charges of every description. The estimate is at the rate of 27*l.* per bed for the hospital portion of the building, and an additional 2,000*l.*, if a basement story be added, as designed.

SIZE OF MORTAR JOINTS IN BRICKWORK.

SIR.—This subject may be considered in a variety of ways. First, if we consider that the strength and capability of sustaining weight will be increased by having thicker mortar joints than those commonly made, then it would appear probable that a building erected with mortar walls and without any bricks, would be of still greater strength; but we know that the mortar usually made would stand on such test. It therefore seems probable that this joint would be preferable. But it may now occur to us—then, why have joints of any thickness? or why should they be of a certain thickness, and neither less nor more? This will lead us to consider the properties of mortar and the duties it actually performs in brickwork, and to endeavor to discover how we can cause it to most effectually perform those duties.

Respecting its properties, it would be unsafe to consider that mortar is generally capable of bearing the compressive power that brick will bear, therefore the less of it we can manage with the better; but so that, flatish pebbles will pass through a fine sieve, and may chance to lodge on edge when in a mortar joint, such would be too thin a joint, causing the brick above it to rise, and the extra thickness of each joint would consequently be an element of instability instead of strength.

The duties mortar has to perform may be considered principally as two, viz., first, to be the means by which each successive course of bricks

may be solidly bedded; secondly, to be the agent which shall enable each brick to bond with those beneath it.

We have already seen that it would generally be inadvisable to have thick joints, on account of any imaginary compressible superiority of the mortar over brick; we shall now see that joints as thin as they can with safety be made will also generally be desirable, when considered in their action, as the means by which "bond" is effected, for bond is the tying, as it were, of the bricks one on more bricks laid across and uniting them, and which is effected by means of the mortar placed between them, which, filling the inequalities of the bricks so placed, will, with a sufficient weight on the upper course, be the means of preventing the bricks in the under course from being dragged apart.

Then to consider whether thick or thin joints will more effectually achieve the bonding, let us consider the action of two stretchers bonding (in English bond) three "headers." If the joint in such case be made thin, say $\frac{1}{2}$ in. thick, then as the stretchers would bear 2½ in. on each of the two outer "headers," and the bonding connection between the stretchers would be at each end of the "stretchers," and in each place being in sectional area (taken parallel to the face of the wall) equal 2½ in. by ½ in.; then such would be the tearing surface of the two outer "headers" be subjected to a compressive strain acting in a direction (nearly or quite) identical with a diagonal to the said arch. Now, if we were to increase the thickness of our joint, then the length of the diagonal would also increase, and would consequently be unlikely to resist so great a strain as the shorter one, for the same reason that a long column will generally bear less pressure than a short one of equal diameter; in the angle of the joint, then, of the shorter diagonal, being less than that of the longer, would give it an advantage over the latter.

But let us yet consider it in another way: if a ½-in. joint be stronger than a ¼-in. ditto, then a 2-in. joint be stronger than a ½-in., and a 2½-in. than a 1-in., a 4-in. than a 2-in., an 8-in. than a 4-in., and so on? Let us consider an 8-in. joint, then our vertical sectional area of the joint will become 8 in. by 2½ in., the 8 in. being its height, and consequently the mortar connecting the ends of the "stretchers" with the "headers" will be easily cracked; and the "bond" in this case, should itself to be no bond in reality, as the strain would here be a tensile one, and which mortar would be unlikely to bear.

And again, if thick mortar joints be the element of strength, why shouldvousairs, or arch-bricks, be cut or rubbed for the sake of strength? or, better still, why not have, as before, joints of, say 8 in. in thickness, or to gain the utmost strength arches of mortar altogether, no bricks being used? HENT AMMONS.

The clause enforcing this mortar joints seems to me a relic of those classical days when every brick was required to be gauged to the same size, and all the joints tuck-pointed; and that when the architectural mind became emancipated, the battle of the style was fought, and it was tested, that small matters of detail were overlooked, and in the routine of the office the clause has remained unchanged and unchallenged. With regard to the thickness of the joint, I am of opinion (without going into the chemical properties of mortar), that the thick joint is preferable if the mortar is good and the bricks generally well made, being of the absorbent nature, such in a certain amount of moisture from the mortar, which moisture is necessary for its proper crystallisation; the thinner the joint the less resistance it can offer to the action of the brick, and the less quantity of moisture it can afford to lose. The thick joint retains its moisture until the crystallisation is complete, and it makes a greater allowance for the inequalities of the brick, and makes a much better bed in every respect. Another tradition of *olden times*, is the practice of rubbed and ganged arches: the arch, instead appearing as strong as, and part of, the surrounding work, has quite a cheery effect, owing to the outer face takes, proving now being needed. If our Gothic architects would try the effect of arches merely arched and set in cement, the character of many buildings would be much improved.

C. N. McI. N.

* "Town Swamps and Social Bridges." By George Godwin. 1869. In *Builder*, *etc.*

I venture to say that where the joints of a piece of brickwork are of an equal thickness of a ½ in. throughout, the settling of the work is

equal, and the joints being small, they do not bulge enough to do any harm. Whereas in a piece of brickwork where there are large joints, the settling of the work is unequal, and in consequence the unevenness of the mortar causes the joints to yield to the weight above, which makes the joints hinge outwards: so that whenever it rains, the joints catch every drop that may trickle down the wall, which, in my opinion, causes a great deal of dampness in the walls.

A BRICKLAYER.

THE FATAL PANIC AT LIVERPOOL.

A TERRIBLE catastrophe has occurred in the Roman Catholic Chapel of St. Joseph, Grosvenor-street, Scotland-road, Liverpool, resulting in the death of sixteen persons, and injury to others. While a drunken man was causing confusion in the crowded chapel by vociferations about not stopping there any longer, some person unknown, whether by way of practical joke or otherwise, bawled out "fire," and a complete panic seized the congregation. A rush was made to doors and windows. It appears that there were large doors opening outwards, with printed directions to push them inwards, and that the people, and to these the panic utterly blinded the people; and one crowd from the chapel met another from a school in the same premises, where another congregation had been alarmed by the same identical cry of fire, the result being that many were thrown down, trampled on, and suffocated.

HERNE CHURCH, KENT.

On Tuesday, the 18th, the chancel of the parish church of St. Martin, at Herne, was reopened after a rearrangement of the interior fittings. Previously to the alterations, the chancel steps were very steep and awkward, and the floor had been brought to within 7 in. and 8 in. of the seats of the sedilia, although these had been raised about 4 in.; and though there were six of the old stalls remaining, these had been placed in such a position as to render the pews useless for their proper purpose of seats for those conducting the service. The floor levels have now been remodelled, rendering the steps of an easier grade, and bringing them into harmony with the sedilia, which have also been restored to their original height; the pavement being laid with Milton's red, black, and buff tiles, in patterns, in place of the old coarse red and black tiles in alternate squares. The old altar-table has been replaced by a new one of oak, with panels and tracery, and covered with an altar-cloth with embroidered super-frontal. Eight new stalls of oak have been carved similar to the ancient ones, and, with them, placed according to the original arrangement of the choir, with the remaining on each side to the west end of the chancel; and the old bench ends, with carved poppy-heads, have been reframed with new seats and backs. A new oak screen, with panels filled with tracery, has been placed at the entrance to the chancel. A fine organ (by Lewis) has also been provided. The alterations were carried out under the direction of Mr. Walter F. Dawson, of London, architect; and the wood carving was done by Mr. Adams, of Herne Bay.

KIND WORDS FROM THE LAND'S END.

We find the following hearty expressions in the *Cornish Telegraph*. As a spontaneous outbreak of kindly feeling, we are tempted to quote it—

"A firm grasp and vigorous shake of the hand, if they be cordial, are good at all times; but at no season are they more fit than now, when mind and body, after a too brief season of rest, must be grinded up for one more stage of life's journey. Distance is no longer, in no barrier to a prompt and hearty expression of good wishes; for electricity can speed a whisper with the suddenness of lightning, and the words of utterance are conveyed hundreds of miles in a few hours. Moved thereby by my first article for the year 1870, we send our hearty wishes to our contemporary, *The Builder*, from our nearly twenty years, we have desired, week after week, something valuable in the way of art instruction or practical hints. For twenty-seven years our friend has earned in the interest of those who plan and those who construct the edifice of the present day. Seeking to elevate and enlarge the views of the one class, and to advance the social and material position of the other, with intelligence and broad that the world is enriched thereby. We see it, and with heart so large that every kind of art and handicraft has its interests studied; and with eye so microscopic that no secret within its sphere escapes, even in the remotest corner of England, but the *Builder* sees it, no wonder that our friend is both prosperous and respected. For twenty-five years he has been at work, and he says with perfect truth that if a right estimate of the labours of his coadjutors and himself be required, the volumes they have produced, and not a single

number, should be glanced at. In this we fully concur. But let one branch of editorial care be the arguments and facts in favour of sanitary progress; the accumulated proofs that disease is dear and health invaluable; that the man who is devoted and the other who is not, in the height of human happiness and the prolongation of human life; and the plain rules laid down to attain greater comfort and more length of days;—and, even here, we find our contemporary's columns a mine well worth exploration. There is, further, in this article, a passage or two particularly grateful to those who have shown industry at heart, not because the topic is our own, but by reason of its hopefulness and confidence in the future. We will quote a few lines—

"And, in the hope that the *Builder* may continue to play a useful part in the future, we wish it good speed in the year 1870."

THE INDIAN GOVERNMENT AND THE CIVIL ENGINEERS.

In the reply received by the Institution of Civil Engineers, Col. Strachey says for the Government of India,—

"It has been a subject of much regret to the Government in Council, that serious misunderstanding of the intention of this notification should have arisen among civil engineers, both in this country and in the Colonies. Excelsior in Council, when informed that misconceptions had occurred, lost no time in issuing a circular order to the effect that the original and true intention of the notification was to assure the civil engineers in the service of the Government in India, that nothing had been further from the Government's intention than to deprive them of the right to impute unworthy practices to the profession. A copy of this circular is annexed."

His Excellency in Council must fully accept the declaration made by the Council of the Institution of Civil Engineers of the principles which are recognized by the Government in relation to the persons who receive their service, and he desires to add that there has never been any intention on the part of the Government in Council on this subject, and that the notification specifically and exclusively referred to the receipt of commission which was a legitimate source of emolument, so being a recognised practice."

The Government made a very blameable misstatement, to which we early drew public attention, and have got out of it in the best way they could.

MIDLAND COUNTIES MIDDLE CLASS IDIOT ASYLUM.

Sir,—Kindly allow me space to say, in reference to this competition, that Mr. A. Waterhouse is now engaged in estimating the London and the other estimates of the architect, by the design having been completed.

His plan was exhibited in the Victoria and Albert Hall, Birmingham, on Monday, January 31st, and on the following days. Cards to view may be had from me.

W. G. BLAYDEN, Secretary.

A NOTE FROM TORONTO.

Sir,—I have been a constant reader of the *Builder* for many years, the numbers of which have so much interested me in the form of a library of libraries. I am an old worn-out architect, and have retired to a snug retreat on the north shore of Lake Ontario, and look as regularly for my *Builder* every week as my *Builder* himself.

The number for November 6th, 1869, was particularly gratifying to me, as it referred to Leeds Castle, in Kent. I was then in London on a tour of inspection, and in employment, having a letter of introduction to a well-known barrister of the name of Blandford, residing at Leeds Castle, who had been appointed to the postmaster in charge of the works at Leeds Castle, who employed me as a timekeeper. I remained there but a few months, as I was a good deal annoyed by being always spoken of as the little Cockney.

I emigrated to Canada ten years afterwards, and was fortunate enough to gain the good opinion of the then Governor, Sir John Colborne, and most of the leading men in York (now Toronto). In 1853 I erected a villa for the Marquis de La Fayette. They were the only persons that I ever met who knew anything of that castle.

I was present with the four men who, on removing the last piece of the oak floor of the Queen's Wardrobe (described in the *Builder*), the chronic oak grinders, which crossed in the centre of the room, were so rotten that they broke with the weight of the men who were at work upon them. They were broken, but were broken by the great frightful wounds on their legs by falling upon the points of the splintered oak flooring which stood upon and under the floor. I was also present at the erection of the temporary bridge across the moat for the conveyance of the stone from the tower to the castle. I was also present when the moat was dragged, and a large pile caught, 4 ft. 11 in. long, weighing 24 lb. I had never seen a pile of that size before, and when I caught the mark was clearly visible.

I have requested my stationer to procure for me Mr. Martin's book, "The Castle of the Kings," page 900, of the 4th of December number, which tells that in the year 1851 the Chamberlain's residence was built in the year 1850 in five hours and five minutes. It consisted of 6,000 changes.

This reminds me of a tomb in Leeds churchyard, erected to the memory of ten celebrated bell-ringers who rang for 13,131, 30 hours without stopping. The whole account was given in the *Builder* on the tenth anniversary of their deaths; so fresh is it in my memory that I know the man who called the bells was over seventy years of age. I have the Chamberlain's residence built in the year 1850 by publishing a true account of the Leeds bell-ringers who have slept in Leeds churchyard for, I think, seventy years, most of my readers will be pleased, and none more than I.

JOHN G. HOWARD.

P.S.—I send you two views of the Toronto Lunatic Asylum, erected by me for the Government twenty years ago.

TENDERS: KITTS' NEST FARM ESTATE, HASTINGS.

Sir,—In August last an advertisement appeared in your paper for tenders for the construction of a new house, on the above estate, and for which at least five or six competent and responsible contractors from London submitted reasonable estimates, also others from the neighbourhood, and from other parts. Tenders having been duly sent in at the appointed time, parties were then informed that the successful person would be written to, and others would be the result in the *Builder*. But such has not been the case, and for nearly five months no result could be known; but, after the time had elapsed, and no person had been selected, he not having submitted any estimate as mentioned at the time invited for. However, such being the case—settling and settling—last week parties have been kept in suspense in knowing the result; the expense, which was not a nominal one, to obtain all particulars, visit the place, make estimates, &c., and not the least could not great injustice, but scandalous treatment, to put persons to the trouble and expense to respond to an advertisement for a mere nominal completion? Your giving this publicity will greatly oblige a few of the unsuccessful.

THE HOLBORN VIADUCT.

We have received a long letter from Mr. Richard Bell, to whom the chief premium was awarded by the Corporation for "his design, in reply to Mr. Haywood's letter in our impression of the 27th of November last. The length of time that has elapsed justifies us in declining to print it.

FOREIGN LOANS—A MISTAKE.

You have done good service in warning the British public against that delusive investment in the sinking funds of *Foreign Loans*. There is an incredible amount in millions that has been lost in Spanish, Mexican, North American, and other State stocks. In one repudiating State, Indiana, the writer lost 1,500*l*. But nothing will do more to warn the public than to see a loan is now in the market for 12,000,000*l*.

A loan is now in the market for 12,000,000*l*, ostensibly for railways; but how know we but that this may furnish a hostile power with means of attack? At all events, these loans, on the first approach of difficulties, become well-nigh unobtainable; and there must ever be the greatest amount of risk attending them.

"Proper national wealth, undertaken on a sure basis and with care, should be fostered by the national Government, ever engaged in party squabbles.

The landowners will very soon be found coming forward offering land to railway companies if they will simply treble the value of that adjoining by raising a line of railway through it.

PAULATIN.

BARRACK ARRANGEMENTS.

A PAPER has been read by Dr. Stallard, to the Social Science Association (Mr. B. Rawlinson, C.E., C.B., in the chair). "On the Construction of Barracks in reference to the Physical and Moral improvement of the Soldier." Dr. Stallard said that he had to lay before them some objections which he had offered to the Government against the principle upon which the most complete barracks are constructed, and to submit suggestions to insure comfort to the soldier, indicating a better class of enlist at less cost than at present.

As a rule, commanding officers prefer the establishment of large barracks-rooms to contain at least twenty-five men; while the soldiers themselves, tired of constant association with a number of their comrades, and, in fact, continual life in public, would like to be more private. Dr. Stallard drew attention to evil effects from the constant association of twenty-five or more men, in the absence of all privacy, and the difficulty of maintaining any high standard of discipline or moral tone among so many.

As a rule, he believed it to be the case that one bad man was more likely to bring the whole down to his own degradation than a good man was to raise them to his, and he attributed to the constant and enforced association of all privates a great deal of their partiality for the cant and the public-house. As a remedy for this state of things Dr. Stallard suggested that barracks should be constructed on the same plan as convict prisons, and so provide for each man a separate cell or apartment for his own use at night. Thus, let us ever remark, the treatment of our soldiers, like that of our poor, is very bad, and we must have some proper if it were brought up to the standard of our treatment of second-class convicts. Dr. Stallard found, moreover, that the cost of barracks, as at present constructed, was not less than 60*l*. per man; whereas the cells of prisoners on the corridor plan cost only 18*l*. per man. He was convinced that the men as-

associated with each other during the day would prefer to be private at night. The separate system would improve their health and morals, and would enable the officers to exercise a more strict supervision over individuals than could be practised under the present general system. In a discussion which took place on the subject of the paper, it was mentioned that partitions had been introduced with good effect in the sleeping apartments of public schools. The partitions need not necessarily be carried up to the ceiling; and it was generally agreed that, whether the corridor system was adopted or not, improvement in barrack accommodation is greatly necessary.

LADDERS FOR FIRES.

Sir,—With reference to the disastrous and fatal result of the fire at Richmond, one of the London papers states that "Mr. Lever, the manager, and Simpson, the clerk, were both at the windows, calling loudly for ladders!" and further adds, that, "Mingey, the cellarsman, knowing there was a fifty-six-round ladder in the yard of the new hotel, got the fire policeman to go with him to fetch it, but their united efforts were insufficient to remove it."

Now, it appears to me the days of such antiquated and inconvenient ladders at present in use are gone by, and that ladders light and portable, composed of tubular iron, galvanised, and fitted together, or taken to pieces in a few seconds, by telescopic joints, at the ladder, in addition to general use, to be supplied to all hotels, in a similar manner as ladders are to the magnificent hotels in New York, viz., fixed from some of the top-floor windows in rear of the building, and reaching within 12 ft. from the ground. There may be some such ladder combining the qualities I have described, at present made in this country.

A SAFETY LADDER.

SEWAGE AND STRATEGY.

YOUR correspondent, "M. F. T.," has taken a wrong view of the subject referred to under the above heading, viz., that the "Enemy" in advancing up the Thames upon London, could bung up our sewage outlet at Barking Creek, and thus poison London.

No city in the world has such a grandly organised scheme for the concentration of filth, and in the "weakness" suggested by your correspondent is our very safety.

The sewage of London, North and South, suddenly discharged upon an advancing fleet would inevitably produce a panic and a retreat, or death by poison.

We have to thank your correspondent's fears for the discovery of a new defence for the metropolis.

L. A.

HOLY TRINITY CHURCH, BARNSTAPLE.

THE new church of Holy Trinity, at Barnstaple, in Devon, has been opened by Dr. Temple, bishop of Exeter. The church was originally built in 1846, but owing to its defective construction, fell so quickly to decay that the whole of it, save only the tower, has been entirely rebuilt. The tower is a Perpendicular one, standing 130 ft. high. It was somewhat higher, but has been lowered some feet, and advantage has been taken of the scaffolding erected for that purpose to carve the hooks left for ornamental purposes at the time of its construction. The new church, which is cruciform, follows nearly the plan of the old walls; with an extension rearward of a few feet, and eastward by the addition of an apse. The nave, instead of being as before, in one single span, with walls comparatively low, is now divided into three parts. The central part has lofty walls, forming a clear-story, into which the old nave windows are incorporated, with new hooded curtain-ribs on the inside. There are now narrow side aisles, with small two-light windows, separated from the nave by an arcade on either side, of Hatherleigh and Ham-hill stone, with moulded capitals. The chancel aisles are covered with double roof transversely, and there is a narrow aisle to these, connecting them with the nave aisles by transverse arches. The old roof timbers are reconstructed, and the carved angels are used again for the corbels, but the apical roof of the chancel is now an unadorned ceiling-shaft with carved capitals. The old pews are reconstructed into open benches, and the chancel is fitted with stalls. The chancel is laid with Milton's tiles.

A memorial window in stained glass in the south aisle is from a design of the architect; another is in course of erection for the east window, by Messrs. Powell. In the west window some coloured glass is introduced. The stonework of this window is made of the old work, but reduced from seven lights to five. The contractors were Messrs. Hartnoll, Palsford, & Cox. The carving of the tower was executed by Mr. Harry Hems, of Exeter. The architect was Mr. W. White, London.

LONDON CORN EXCHANGE COMPETITION.

As one of the architects invited to prepare a design for rebuilding the Corn Exchange in Mark-lane, Mr. John Whitehead found it necessary to address a letter to the committee on certain objectionable points in the conditions, especially as to the circumstance that while the selected architect's design would be rejected if it could not be carried out for an amount within 10 per cent. of the sum named (20,000), the light and air rights of adjoining tenants might lead to a large expenditure, if not prevent the building being carried out altogether. The committee removed one of the objections taken, but refused to make any arrangements as to the latter; and Mr. Whitehead therefore declined to compete.

Other competitors will do well to keep this question of compensations in mind.

NEW POLICE STATION, IPSWICH.

At the Quarter Sessions held at Ipswich last week it was resolved that the designs prepared by Mr. W. Oldham Chambers, architect, Lowestoft, for the new police-station in Ipswich, should be accepted by the county, and the same were ordered to be sent by the Clerk of the Peace to the Secretary of State forthwith.

The arrangement on the ground floor gives accommodation for the Petty Sessions, with magistrates' waiting-room, attorney and witnesses' rooms, lavatory, and so on. At the rear of the above, provision is made for six cells, contiguous to which is the constables' sitting-room, coat-room, bedding store, and the nautical office. The superintendent's department contains parlour, living-room, kitchen, and five bedrooms, with infirmary for sick prisoners if required. The constables are provided with five bedrooms, reached by a separate staircase from that used by the superintendent. It is intended to commence the works immediately the plans are approved by the Secretary of State.

CHURCH BELLS AND CHANGE RINGING.

A LECTURE on this subject was lately delivered at the Bury Athenaeum, by the Rev. J. J. Raven, D.D., head-master of Yarmouth Grammar School. The chair was taken by the new president, Lord John Hervey. The rev. gentleman, having introduced the subject, said there was no metal which would not give a musical sound in some shape or other, yet bells from the earliest times seemed to have been made of pretty nearly the same material—common bronze. At first, however, they were not cast, but hammered into shape, and of course nothing like music could possibly be got out of them. He was not certain when the casting of bells was first introduced into this country, but certainly before the Conquest. The present mode of casting was much the same as that made use of centuries ago. About the year 1000 there must have been a great many bells in England. There were no bells in this district, however, of very great antiquity. The oldest, perhaps, was one at Wordwell, a queer, low-shaped bell, with no date upon it, so that they could not judge correctly of its age. Some of the inscriptions on bells were very amusing; there was one on a bell, in Ickworth Church, made by a man named Pleasant, at Sudbury, which was rather a puff—

"Henry Pleasant has at last

Made good as can be said."

Another was:—

"Henry Pleasant did me run

In the year seventeen hundred and one."

Some of the inscriptions were historically valuable, as, for instance, this:—"I was cast in the year of plague, war, and fire, 1666." In later bells the churchwardens' names were put in as well as the foundry, but the present time, he was glad to say, they got wholesome inscriptions, not superstitious invocations, such as "Praise the Lord," "Give thanks to God," &c.

CHURCH-BUILDING NEWS.

Aiton (near Wighton).—The old parish church at Aiton, which has recently undergone a restoration, has been re-opened for divine service. The old church is a very ancient structure, and appears to have been built upon the site of an edifice of still greater antiquity; but of the anterior church there is no historical record. The remains which still exist exhibit rather a good example of the Norman style. The present church, which is composed of a nave, aisle, and chancel, appears to have been built in the thirteenth century. Before the recent improvements the church had fallen into a deplorable state of decay. It was, in fact, a complete wreck, and was damp and unwholesome. The old oak beams of the nave had been covered, probably some century ago, by a flat-plastered ceiling only 13 ft. from the floor. The floor was flagged, and very damp; the pews were of a very unsightly description, and much dilapidated, while the pulpit—a structure of a rather unbecomingly appearance—was stationed in the middle of the nave. Modern windows, of by no means ornamental construction, in the nave and aisle walls increased the unprepossessing appearance of the place; while the whole of the interior, including the pillars between the nave and aisle, which were of good dressed stone, were whitewashed. All this, however, has now been changed. The church has been repaired with open benches placed on a wood floor. The passage has been flagged and the chancel floor has been relaid with ornamental encaustic tiles. The north and south walls have been rebuilt, and the old windows have been replaced by grouped lancet windows, in the style in which the church was originally built. An entirely new roof has been put upon the aisles; and in the nave and chancel the plaster ceiling has given place to heavy oak timbers, at an altitude double that of the previous ceiling. When the old roof was removed, a somewhat singular phenomenon was brought to light, exhibiting rather a curiosity in church architecture. All the tiles were fastened together by means of the shank bones of sheep. The work of restoration has been carried out under the direction of Mr. Birkett, of Carlisle, architect. Mr. Pearson, of Wighton, had the joinery; Messrs. Roper & Beatty, of Dalston, the masonry; Mr. Wilson Bell, of Wighton, the painting and plumbing; and Mr. Joseph Fell, of Wighton, the slating.

Albury.—A full choral morning and evening service has been held at Albury Church, in celebration of the opening of the new organ and chancel. The new chancel has been erected at the cost of the Duke of Northumberland, and improvements in the nave, if not its reconstruction, it is expected will take place next year. The present improvement—that of the erection of a new organ, in a new chancel, with artistically designed roof, was the first step in introducing church architecture in a purer form into Albury. The new chancel is from the designs of Mr. A. W. Blomfield. The windows are filled after designs by Lady Rokewood Gage. The three at the east are memorials of her ladyship's father, Mr. Henry Drummond. An oak screen separates the chancel from the nave. This, and the oak stalls, were made by the contractor for the whole work, Mr. Inkpen, of Abinger.

Bathampton.—The Church of St. Thomas has been re-opened, after undergoing extensive alterations. The work was commenced about a year ago, when Mr. E. A. Gruning, of London, architect, after making a survey, reported that to carry out the repairs and alterations most necessary a sum of £600 would be required for the repair of that portion of the church the expense of which would fall upon the parish. In June the contractors, Messrs. W. Moore, H. Carrell, and M. Osborn, of Havant, commenced the work of restoration. The walls were cleaned of stucco and pointed; a new bell-turret, a porch, and a new vestry were erected; the pulpit was removed, and its place supplied by a carved one of modern style; a reading-desk was provided; gas laid on the place of the pipe formerly used; and many alterations, improvements, and additions were made. The principal feature in the church now is a stained-glass window, presented by Messrs. F. J. Lightfoot and Richard Hewitt, of London, and executed by the firm of Lavers, Barrand, & Westlake, of London, the subjects represented being the Crucifixion and the Last Supper.

Maidstone.—The Free Church of St. James, Maidstone, a mission church in the parish of St. Paul, has been opened by license from the Arch-

biapoh. The building is of brick, capable of holding 200 persons, all the seats being free. The walls internally are built of white brick, red and blue Staffordshire bricks being introduced in the arches and elsewhere. At the east end is a group of four lancet windows, the arches of which are supported by red shafts, having Bath stone bases and caps, the latter left in block for carving; the whole window being enclosed by an arch in red brick. The west end has a large circular window in the gable; and below it, right and left are coupled lancet windows; between them is the entrance. The western gable end is surmounted by a bell-cot in Bath stone, in which is hung a bell cast by Messrs. Warner & Sons, of London. The church is warmed on a patent principle by a Gill stove sunk under the floor. The lighting is by gas, for which gasoliers have been designed in accordance with the style of the building, by the architect, Mr. Hubert Benstead, and they have been erected by Mr. Golding, of this town. The builder is Mr. Henry Bridge.

Astley.—A new mission school church at Astley, a small outlying hamlet of the parish of Pontefract, in the West-riding of Yorkshire, is a simple and unpretending structure of brick, built in the Early English style, and having an apsidal chancel. Its extreme length is about 60 ft., and its width 18 ft. The nave is divided into five bays marked externally by deep buttresses, and having coupled single-light windows each, while in the gable and over the single-light windows breaking up into the roof by gables. At the western end a bell-cot, terminated by a wrought-iron cross, distinctly marks the character of the building; and the porch, of timber construction, occupies the westernmost end of the south side of the nave. Internally the walls are left unplastered, and the warm appearance of the brickwork is thus exposed to the usual whitewash. The roof is an open one. The chancel is formed by a raised step, on which is placed a perforated low screen of woodwork, behind which are seats for the choir, of a more ornamental character than those of the nave. Beyond the choir rises the sacristy, elevated three steps above the nave, and the choir and choir are laid with Shropshire tiles, from Messrs. Maw's works at Benthall, and the central window of the apse is filled with a stained-glass window, having for its subject the Crucifixion of our Lord. The church is nominally constructed to accommodate only 125 persons, but 180 found sitting or standing room in at the opening. The edifice has been built by Mr. R. Yates, of Shifnal, from the designs of Messrs. Paul & Robinson, of Manchester. The fittings, some of which are available for school purposes, were made by Messrs. Sidebottom & Co., of Manchester. The altar furniture was made from the architect's design by Messrs. Jones & Miller, of Birmingham; and the persons of the choir, of Chester, supplied the stained glass, also from the architect's drawings. The font is the work of Mr. Yates, the contractor. The site on which the church stands was given by Mr. Henry Gardner, of Westley.

Baury.—Harworth Church has been reopened for divine service after restoration. Mr. C. J. Neale, of High Oakham, near Mansfield, was engaged as the architect. Plans having been prepared and approved of, the contract for the work was undertaken by Messrs. Robert Wood & Son, of Doncaster. The work includes the re-erection of the whole of the body of the church and the chancel, with the addition of two new transepts, each 17 ft. 6 in. wide, a vestry, and an organ-chamber. The chancel arch and the arch at the entrance from the porch, from their being Norman in style, have been retained. The church has been built with wallstone obtained from the neighbourhood, and is dressed with ashlar stone, supplied from Doncaster. The tower the same as before. The style is Early English. The building has been retained—that of the Early Decorated. The floor of the chancel, and within the communion-rail, has been laid with encaustic tiles, supplied by Messrs. Maw & Co., of Bromley, Shropshire. As regards the interior arrangements, very little difference from the former church is perceptible, the old stalls, reading-desk, and pulpit having been nearly refixed. The church will henceforth be heated with warm water. The cost of the restoration has been about 1,450l., most of which is already contributed.

Bristol.—For the proposed alterations in the Mayor's Chapel, plans have been prepared by Mr. Butterfield, architect, according to which it is intended to place the organ in the recess in

the tower; by which means the general effect of the building will be more spacious. It is also proposed to make some alterations in the steeple, so as to move the "Red Maid," who now crows close upon the altar-rails, further back into the building. The local *Times* hears it is contemplated to have large repairs and additions made to the organ, before it is re-erected. The cost of the whole, it is estimated, will not much exceed 500l. The matter will again be brought before the council before the plans are confirmed.

PROVINCIAL NEWS.

Baldock.—For a proposed town-hall for Baldock donations amounting to upwards of 500l. have been promised. It has, however, been resolved that a site shall not be purchased until 1,000l. have been subscribed.

Richmanworth.—The completion of the new town-hall has been celebrated by a public dinner. The new building has been erected by a limited liability company (with shares of 5l. each) on the site of the old market-house, no building stood for years in a most dilapidated and unsightly condition. The present structure is built in the Domestic Gothic style of architecture. The assembly-room is 55 ft. long, 27 ft. wide, and about 22 ft. high. It is well lighted, having five windows on each side. The roof is light, being a hammer-beam roof with an inter-bolted iron truss. There are two stone cornices supporting the roof, which will be carved when the funds permit. The artificial illumination is furnished by two sun-lights. The hall will accommodate 400 persons, or about 350 after deducting the space necessary for a platform and gangway. There is an ante-room at its southern end, and at its northern end a staircase room, nearly 30 ft. long, and 12 ft. wide. In addition to these rooms, there are two other ante-rooms and a "cottage" for the hall-keeper to live in. The front of the building is of red brick and Bath stone, and over the entrance-doorway is a gable-turret, in which it is intended to place a clock. The cost of the erection has been about 30,000l. Mr. A. Allom, of Westminster, was the architect. The contract was divided between Mr. T. Holland and Mr. H. H. Hudson, builders, Richmanworth. Mr. A. Allom was the architect of Lord's Grand Stand.

Harthill.—The new buildings of the North Staffordshire Infirmary at Harthill have been opened by the Duchess of Sutherland. The high sheriff opened the proceedings by presenting an appropriate address, to which her Grace responded in an able speech, in the course of which she said:—"I trust that I may be allowed earnestly to commend the claims of this house of mercy to the heart of every woman in this neighbourhood, who may have the honour of knowing her person, or her person, or otherwise, to its suffering occupants. I must also venture to express the hope that no feelings of sectarianism, arising from divisions among those who differ in forms only, may be allowed to weaken the unanimity required for the support of this charity. I will with the greatest pleasure concur to their Royal Highnesses the Prince and Princess of Wales the intelligence of the completion, under God's blessing, of the building, the foundation-stone of which was laid by his Royal Highness, and graced by the presence of the Princess, and the object of which is one that has always her tenderest sympathies."

Frant.—The Thompson Memorial Reading-room has been opened. It was provided for the schoolmaster and schoolmistress of Frant school. The building is erected as a memorial of respect and gratitude to the late Rev. Sir Henry Thompson, bart., the funds for which were raised by subscription amongst the parishioners of Frant. The building is situated on the site of the old rectory, and is built with white bricks and red tiles, and is of that peculiar style of architecture which is usually seen on land belonging to the Earl of Abercromby. The cost of the building is between 500l. and 600l.

Watford.—It is proposed to erect here an Agricultural Hall, by means of a subscribed capital of 3,000l. in 5l. shares, and the sum of 2,200l. is already subscribed. The active agent in this movement is Mr. Alfred Sedgwick, the hon. secretary to the West Herts Agricultural Society.

Leuces.—The Visiting Committee of Justices propose that accommodation should be provided in the County Lunatic Asylum for fifty additional female patients, at an estimated cost of

3,600l. The plans and estimates have been prepared and laid before the Home Secretary.

York.—After the conclusion of business at the Corn Exchange on Saturday last, Mr. F. Carr said there was now a prospect of having a covered market erected in this city, as the corporation would supply for an Act in the next session of Parliament. There had been a great fight as to where the market should be placed. The site had been determined upon, but he heard with very great regret that there was a sort of opposition to deriving a covered market on that site at all. He, however, trusted that there were no persons, either in or out of York, who were really bent upon opposing this desirable scheme, considering that a covered market had been wasted for so many years.

East Bedford.—The New Temperance-hall, in Chapel-gate, for the Band of Hope and Temperance Society, has been opened. The building was formerly used by the Exchange-street Temperance Society, but was bought by the Chapel-gate Society for 300l. Messrs. Bellamy & Hardy, of Lincoln, were employed in the preparation of the plans, and the work was provided for by the building and under the direction of these architects the works have been carried out by the contractors, Mr. Liller, carpenter; Messrs. Bailey, gasfitters, &c.; and Mr. Pollard, decorator and painter. The main hall is capable of accommodating about 600 persons. The room is lighted by a number of statuettes placed round the wall, and each bearing two lights. There are a workmen's reading-room, committee and waiting rooms, one of which, behind the stage, can be turned into an orchestra at small trouble.

FROM SCOTLAND.

Ducklivity.—The new waterworks, which have just been completed, at Ducklivity, have been inaugurated. The village, till the present year, has been supplied with water from a brook which runs along its side; but about two years ago a water company was formed. A spring on Upper Caithley Farm, from which the water is principally obtained, was measured, and it was calculated that the supply from it, amounting to 2,000 gallons in twenty-four hours, would be adequate for the demands of the population, which numbers about 350. The ground was surveyed by Mr. Alexander Malcolm, jun., Ballroom; and estimates having been procured, it was seen that the supply might be obtained at a cost of about 150l. The capital was soon subscribed, in 11 shares, by upwards of twenty shareholders; and the contract was undertaken by Mr. Archibald Morrison, plumber, &c., Stirling. The contract embraced the laying down of 1,234 yards of 2½-in. cast-iron pipe, and 134 yards of 1½-in. pipe, the erection of wells, construction of cisterns, &c. The water is collected from the spring which rises near Caithley Burn, and runs about 60 yards into the cistern; it is then conveyed through outfalls, in some places 9 ft. deep, down to the Culbokie-road, and into the village. The fall is considerable, and the pressure is good. It is thought that a water-rate of 1s. will amply repay the capital expended. Many of the residents have taken the water into their houses.

Books Received.

The Legend of Christian Art, illustrated in the Statues of Salisbury Cathedral. By the Rev. H. T. ASHFIELD, M.A. Salisbury: Brown & Co. London: Simpkin, Marshall, & Co.

THE statues in the external niches of Salisbury Cathedral have been restored, whether well or ill it is unnecessary for our present purpose to say; and Mr. Arncliffe, who is a minor canon of Salisbury, observing how few amongst the multitude of spectators who gaze upon the statues are able to identify any but the most familiar of the figures, has written this little book for their elucidation. Inasmuch, however, as these figures represent some of the most famous saints of Western Christendom, the volume has a wider use, and may be regarded as a useful handbook for architects and others engaged in ecclesiastical art, as well as for visitors to galleries and cathedrals at home and abroad. Many of the latter certainly lose much of the interest hidden in what they look at through want of such information as is here set forth. Husebeth's "Emblems of Saints," which, though useful as a pocket companion enabling tourists to identify saints, does not give the reasons why particular emblems have been assigned to them, shows how

large a number of personages whose office occur are not mentioned by Mr. Armfield. Still his book is useful as far as it goes, and those who want fuller information on the subject may consult Père Cahier's book, "Les Caractéristiques des Saints dans l'Art populaire, énumérées et expliquées." The "Legenda Aurea" (Golden Legend) and Mrs. Jameson's "Sacred and Legendary Art" have, of course, supplied Mr. Armfield with much of his information. The legend of St. Osmund, the originator of the "Use of Sarum," is taken from a Latin MS. in the British Museum, which the author believes has never before been printed. Of course, we do not ask our readers to believe all these tales. Mr. Armfield says on this point,—

"Our own attitude towards these legends, whether as writers or as readers, I could wish to be mistaken. It is, of course, no part of my present business to establish or defend them. But one thing about them will be admitted by all. Although from the change in the modes of European thought and feeling, which the critical spirit of modern times has introduced, we may smile at the extravagance, the disregard of all the laws of incident everywhere discernible in these medieval legends, yet it is a history of processes in the inner life which are being continually reproduced within the compass of our own individual experience impossible not to recognize in their details the features of exalted ideals of character, a unity of life purpose and an heroic devotion to duty, which will to the last command the admiration and the sympathy of mankind."

Construction of Hospitals. By DOUGLAS GALTON, C.B., F.R.S. London: Macmillan & Co. 1869.

Our readers will remember that Captain Douglas Galtion read an address on the general principles which should be observed in the construction of hospitals before the British Medical Association in Leeds. This he has now privately published, with illustrations and a report of the discussion that followed the reading. A fellow-consultant is given, as appendix, of the ventilating fire-place, founded on General Morin's experiments. We take exception to Captain Galtion's observation in the preface, suggesting that improved hospital construction is to be dated from the Report of the Royal Commission on the Sanitary State of the Army of 1857. But we may have another opportunity to look to the address generally.

VARIORUM.

"Adon's Essays from the *Spectator*," as just now issued by Tegg, make a volume of enduring value and interest. Addition, as an essayist, has long influenced society, and will continue to do so; and it was a good thought to bring his work together in a compact form, cleared from inferior matter. It is unnecessary in this place to inquire if the editor has not included some few essays by other contributors to the *Spectator*. The object of the volume is not to settle what Addison did and what he did not write: here, at any rate, we have the great bulk of what he contributed to that famous serial.

—The *January Quarterly* is good and varied. An article on the Land Question in France will pay for attention, especially at this moment. The *Louvre* gets but scant justice at the hands of the reviewer of "The Holy Grail." Mr. Stow's "Vindication" is rightly knocked about.

—Hints on Sanitary Reform; with a Plan for the Disposal of the Sewage and Débris of Glasgow. By James Gray, M.D., and Robert Budge, Architect. Glasgow: Cairns & Co. The authors of this pamphlet propose to convert the sewage and filth of Glasgow into artificial islands, to purify the Clyde by a scheme of drainage and conveyance through intercepting sewers down the river banks on both sides as far as Newhall Island, where tank pond and other works would be used in converting the sewage into artificial guano, the purified water being allowed to pass into the river. As many as twenty different schemes of disposing of the Glasgow sewage have been projected within the last ten years.

—Prison Discipline, with some Suggestions for its Improvement." This is a letter addressed to Mr. Henry Farnall, chairman of the Middlesex magistrates, by Mr. A. Angus Croll, J.P., late high sheriff of the city of London, &c. The letter takes one side of the question; urging the useful employment of prisoners. He says—

"I feel a strong aversion to the continuance of our present system. The plan which I propose would, I think, bring with it a very great saving of expense. Yet should not be so skilled and unskilled labour which the waste of our prisons be almost entirely unproductive? Might it not be employed so as to produce some return? I cannot but think that something might be effected. I feel sure that something ought to be attempted, in this direction."

He proposes to extend and develop the principle of employing prisoners in their own trades,

a principle, as he observes, already to some extent in operation. He would only keep them above starvation point, leaving all beyond that to their own exertions and wages:—

"All I contend for is that a true system of prison-discipline should include the following points:—

1. That in the classification of prisoners they should be grouped according to their trades and occupations, so that man following his own proper calling, and receiving better or worse accommodation in proportion to his earnings.

2. That if a prisoner will work, he shall be at, except the poorest fare and in the scantiest quantities.

3. That all beyond this shall be dependent on the man's own exertions and wages.

4. That a contribution be levied upon the proceeds of the convict's industry in payment for the reasons provided by the prison authorities.

5. That an adequate motive to work be provided, and that the motive be of the same kind as that which actuates those who are at liberty."

—A Chart of Industrial Life, with some Instructions for its Use. London: Simpkin & Marshall. The word "chart" is here used as a figure of speech relating to the avoidance of obstacles and dangers in industrial life:—

"To sum up," says the author, "intelligence and goodness of disposition are indispensable qualifications to enable mankind to enjoy well-being in its highest form. Without real education extended to all children these qualifications will not prevail among adults. And since children should provide education for themselves, all adults who are not indifferent to the happiness and improvement of society must lend their aid to have it provided for them. If, therefore, the neglect of the education of children in these parts fully account for the number of destitute and miserable to be found in every country, then if similar neglect and neglect are permitted, the number of destitute and miserable among us will remain diminished."

—The author of these countries expose or kill their children. In others, they passively permit them to grow up ignorant, vicious, and miserable. The latter conduct the former is more culpable. The result of the former is the latter is frightfully crushing. Let it be our endeavor, while we keep free from the guilt of destroying our children, not to desert their reproaches for suffering them to live."

Miscellaneous.

Completion of the Liverpool New Exchange Buildings.—The reconstruction of the Exchange Buildings, of which a view and description have already appeared in the *Builder*, has now been completed. The present quadrangle, like its predecessor, is surrounded on three sides by an arcade, but, unlike the old one, the new arcade stands before the building, except at each end, where it is terminated by a pavilion, and in the centre of the north wing, where it passes under the principal tower. The architectural effect of the new building is very different from that of the old; the latter partook of the Palladian character of the town-hall. Outside the quadrangle, in the streets which bound the property of the company, the exterior of their buildings has greatly improved the aspect of this part of the town. In Exchange-street East the alignment of the property has been altered, so as to bring that front into range with the Liverpool and London Chambers, and the turret at the corner of Tithebarn-street forms an agreeable termination to the view from Dale-street. At the foot of this turret, as in Tithebarn-street, Chapel-street, and Exchange passages, east and west, various other improvements have been effected, whereby the convenience of the public and the appearance of the buildings have been promoted. The architect of the new edifice was Mr. T. H. Wyatt.

Great Strike of Workmen in France.—A general strike took place recently among the workmen at the iron-works of M. Schneider, the president of the Corps Législatif. About 10,000 persons at Creusot left off work. The origin of the strike was to do with an offer spontaneously made to the workmen by the manager to leave to the men the direction of their own savings-bank: it had nothing to do with wages. The strike commenced first in the building workshops, whence the leaders proceeded to the forges, furnaces, and mines, where they successively induced the men to join the strike. The strike, however, seems to have ceased as suddenly as it commenced.

Death of Mr. Broome, of the Temple.—We regret to hear of the death of the celebrated gardener of the Temple, Mr. Broome, whose ornamental trees and ponds are so well known to the citizens. The readers of the *Builder* were among the first to have their attention drawn to Mr. Broome's merits. He published a book on his favourite flowers which he did much to render popular; and the Londoners were greatly indebted to him for the floricultural improvement of their squares and open spaces.

The Approaching Census.—Dr. Begg urges, as we did previously to the last census, that information by its means should be obtained respecting the state of the houses of the people. This was done in regard to Scotland at the last census after some difficulty, and it would be most valuable with reference to many social questions if similar information could now be secured for the United Kingdom. The points ascertained in regard to Scotland were the number of rooms in each house, the number of persons in each family, and whether the houses had or had not windows. The following was the curious and instructive result for all Scotland:—Houses without windows, 7,964; houses of one room, 226,729; houses of two rooms, 246,601; houses of three rooms, 75,933; houses of four rooms, 37,186; houses of five rooms, 19,910; houses of six rooms, 15,278; houses of seven or more rooms, 37,191; total houses in Scotland, 666,795. The full details were given at the time also in a tabulated form in regard to Edinburgh and Glasgow, and are not only very instructive, but have given a great impulse to social and sanitary improvement in those cities. If similar details were given for every city and town in the empire, and if they were continued every ten years, we should not only lay a solid basis for social science in regard to diseases, pauperism, and other evils, but we should be able to compare one town with another, and from time to time the kingdom with itself.

Metropolitan Fire Brigade Statistics.—The report to the Metropolitan Board of Works of the chief officer of the Metropolitan Fire Brigade has been printed. From this report it appears that 1,784 calls were received during the past year; that 120 were false alarms, 93 chimney alarms, and 1,572 calls for fires, of which 199 resulted in serious damage, and 1,373 in slight damage. The fires of 1869 show a decrease of 95 compared with those of 1868; but compared with the average of the last ten years there is an increase of 230. These lists do not include trifling fires or chimneys on fire. The energy and activity of the firemen are shown by the fact that amongst the brigade of 378 firemen there were 102 accidents from contusions, wounds, sprains, burns, &c. Amongst causes of fires prominent places are held by the candle, the boiler, tobacco, the fire-spark, the airing of linen, furniture, and clothing, gas-fires, gas-cases, and swinging brackets, paraffine, stoves, &c. Out of 1,572 cases specified, the candle is set down at 202, the fire-spark at 133. The next is 45 from smoking tobacco, and gas-escapes and fire fires follow next in order.

St. James's Church, Aldgate.—At a meeting of the City Commission of Sewers on Tuesday last, with reference to this church, of which the members of the Court of Common Council are the patrons, information was given that the edifice was in such a dangerous condition that no repairs could be performed in it, and that no funds were in hand to restore the fabric. Mr. John Young, the district surveyor, had reported that the arched ceiling over the entrance to the church had sunk, and was in a dangerous state, that the external walls were fractured, and were also dangerous; that the pillars were rotten and decayed; and that the belfry windows likewise required repair. The expense of shoring up the church was reported at 251. or 301. The necessary steps were thereupon ordered to be taken. A letter on the subject has been written by Mr. Daw to the town clerk, with a request that it might be brought before the notice of the Common Council, and that they might be asked to question whether the structure shall be restored or not, or whether the amalgamation of the benefice with the adjacent one of St. Catherine, Cross shall be effected.

Free and Cheap Steel for Rails, &c.—It is expected that the approaching expiration of Mr. Bessemer's patent for converting pig-iron into malleable iron, and that again into steel, without any additional consumption of fuel, will lead to a considerable degree to the future safety of railway passengers. The patent will come to an end in February, and as a result, it is expected that steel rails, which have hitherto been almost too expensive to be used, will fall to a price a very little above that of the best iron. The projectors of new street tramways now will, no doubt, avail themselves of this material. Mr. Bessemer first communicated an account of his process to the meeting of the British Association at Cheltenham in 1855.

New Cemetery for Bingley.—In accordance with a notification given to the newly-formed burial board for the parishes of Bingley and Holy Trinity, Mr. P. H. Holland, of the Burial Acts Office, Whitehall, has visited Bingley for the purpose of inspecting the site of the proposed cemetery. Mr. Taylor (of Taylor & Garthwaite, architects and surveyors, Bradford, who are instructed to prepare plans for the laying out of the cemetery), and several other gentlemen, members of the Board, and ratepayers, attended. The site of the cemetery is at the north-west end of the town, and consists of ten acres of rising and undulating ground, which have been purchased for 3,500*l*. After Mr. Holland had gone over the ground, a meeting was held in the Mechanics' Institute, but no formal objection was submitted; and the vicar, although he disapproved of the entrance to the cemetery being formed so near his residence, stated that he should not oppose the public convenience. A resolution requesting Mr. Holland to recommend the Home Secretary to approve of the site was then unanimously adopted.

Archæological Discovery.—An interesting discovery has just taken place at Tolethorpe, near Stamford. Whilst excavating in the grounds of Mr. Charles Ormston Eaton, the workmen came upon the foundations and other remains of an ecclesiastical building of the fourteenth century. In *Howe's Rules*, who first recorded the fact, "Before the year 1300, Sir John de Oketon and Alice his wife, presented a clerk to the church of Little Causton; but whether they were owners of the manor of Tolethorpe I have not been able to discover; it is probable, however, that John de Oketon is the same person with John de Tolethorpe, who, in the year 1301, founded in Tolethorpe an hospital for seven poor men, and a chantry for the benefit of his soul." The writer adds, "all the inquiries I have made relative to the chantry of Tolethorpe have not procured for me the least information as to the site of the chapel or other places of worship, of that religious foundation."

Rotherham Hospital and Dispensary.—The foundation-stone of the proposed hospital and dispensary at Rotherham has been laid with Masonic honours by the Right Hon. Earl de Grey and Ripon, K.G., Lord President of the Council, Deputy Grand Master of England, and Provincial Grand Master of the West Riding. In the selection of a suitable design for the new building, the successful competitors were Messrs. Mallinson & Bakewell, of Leeds. The contract was let to Messrs. Jakow Brothers, Parkgate, for 4,680*l*. The Tudor style of architecture has been adopted. The total length of the building will be 260 ft., and the breadth from front to back 180 ft., each department occupying a separate block, and being entirely isolated. The principle of isolation will, in fact, be extensively adopted throughout the building, while each ordinary patient will be allowed 2,000 cubic feet of space, and those of the special wards, 2,500. The total sum subscribed and promised is upwards of 6,000*l*, which will about meet the probable cost of site and buildings; but about 2,000*l*. more will be required.

Premises for Odeurs.—As an encouragement to colonial flower farmers, various premiums have been placed at the disposal of the council of the Society of Arts, in the form of seven years, by Dr. Septimus Piesse, F.C.S., including 5*l*. for one pound of Otto of Bergamot, of the value of 16*l*. or more in the London market, being the produce of plants (*Citrus bergamia*) grown in Australia, New Zealand, Natal, any of the British West India Islands, or any other British colony dependent; 5*l*. for one ounce of Otto of Rose, of the value of 20*l*., and 10*l*. for a canister of essenced butter or fat, scented with any kind or sort of flower,—all the product of the same colonies.

Poor-rate Valuation Lists.—A Poor Law Board return for 603 of the unions in England and Wales shows that in April the valuation lists had been completed in all but ten of them. The amount as settled by the assessment committee, in the valuation lists last approved, of the gross estimated rental was 95,974,617*l*. The amount of rateable value contributed by the contribution to the common fund was calculated at Lady-day, 1868, was 79,790,257*l*, being about four-fifths of the rateable value of the whole of England and Wales. The expenses incurred by the committees in the year 1867-68 amounted to 35,176*l*, and in 1868-69, 32,186*l*.

Earthquake-proof Churches.—A Philadelphia letter in the *Times* says:—"The people of California, since the earthquakes of 1868, have a great dread of recurring shocks. We have intelligence from San Francisco that the Roman Catholics are building there 'an earthquake-proof church.' The side walls above the basement are only 30 ft. high. At this height a roof rises, which, with the main roof, is supported independently of the walls by two rows of pillars inside of them. Both roofs are firmly bound to the pillars, and the pillars are fastened together by iron cross-beams, secured with heavy iron bolts, forming a network of great strength. The theory of the plan of construction is, that should the pillars be shaken down, the roof would be launched off outside the walls, instead of falling inside, thus giving a chance of escape from the ruins. In this falling, the roof would be carried aside a distance of 50 ft., the length of the pillars."

The Decoration of Audford Church.—The decorative work has been proceeding under the hand of Mr. Meek of Kingston, Gloucester, directed by Mr. Gambier Parry, and the order of Mrs. and Miss Price, who gave the organ. This decorative work is now finished. The base of the walls is chocolate, with cream colour above. The mouldings of the chancel arch, with its dog-tooth ornament, are picked out in various colours; the organ-front showing beyond the arch. There is diaper work at the east end with the sacred monogram in gold; and the chancel shows a blue firmament, powdered with gold stars. More colour has been added, and texts have been painted around the walls and over the chancel arch and communion-table.

Memorial Tomb in Abbot's Leigh Churchyard.—In this churchyard there has just been erected a tomb in memory of the late Lady Miles, wife of Sir W. Miles, bart., of Leigh Court, and of one of their children. The design was furnished by Mr. Pope, architect; and Mr. Parry, marble mason, Clifton, has executed the work. The tomb, as described in the *Bristol Times*, consists of a red Mansfield base, with chamfered gable plinth, surmounted with a red granite mitre ledger, with an elaborately-carved marble urn rising in relief on the ridge. At the head and foot of the tomb stand two ornamental scrolls, different in character, on a red granite plinth. The whole is surrounded by a stone edging, enclosing an area of about 10 ft. by 8 ft., with a low ornamental railing.

Proposed New Corn Exchange for Doncaster.—It has long been contemplated by the town council of Doncaster to erect a new Corn Exchange adjoining the present Market Hall, and in close proximity to the Cattle and Wool Markets. The question was again mooted at a council in committee. Mr. Watkins's plans were again brought under consideration; and after considerable discussion, it was agreed that Mr. Watkins, of Lincoln, architect, be instructed to prepare estimates, in accordance with his amended plan, of the cost of the proposed new Corn Exchange and south-east wing, and submit them to the council without delay.

Presentation of a Testamental to the Ex-Borough Surveyor of Penzance.—We observe, from the *Cornish Telegraph*, that a public recognition has been made in the town-hall of the services of Mr. John Mathews, who has lately, for the last time, resigned the borough surveyorship of Penzance, which he has held during the space of a quarter of a century. A purse of 500 sovereigns, a massive silver salver, and a parchment bearing the best good wishes of a host of friends, were offered to him on his retirement from the more active and laborious duties of his office. The salver bears this inscription:—

"Presented to Mr. John Mathews, with 500*l* of 500 sovereigns, by the corporation and inhabitants of Penzance and the neighbourhood, on his retirement from the office of Surveyor of the Duches Colonies, the author of two busts of Marie Antoinette, and other works, who has just had a mishap. She had sent to Paris, from Rome, a statue to be cast in bronze by one of the best French artists. This work has arrived broken to pieces. The duchess has thus lost a year's labour."

Destruction of a Statue about to be Cast in Bronze.—The sculptor Marcello, a pensioner of the Duches Colonies, the author of two busts of Marie Antoinette, and other works, who has just had a mishap. She had sent to Paris, from Rome, a statue to be cast in bronze by one of the best French artists. This work has arrived broken to pieces. The duchess has thus lost a year's labour.

The Treatment of Sewage with Carbon. Mr. R. Hinde, of Lancaster, writes us, pointing attention to the fact, corroborated by a report from the Lancaster Guardian, as to proceedings in 1849, that at that time he had not only proposed the treatment of sewage with carbon, but had successfully practiced the process at Lancaster. Neither does Mr. Hinde claim the origin of the process, but names Mr. Jasper W. Rogers, and Mr. Clarke, a London manure manufacturer, as having claimed it at that time. These names, and especially that of Mr. Jasper Rogers, many of our readers will remember in this connexion. Mr. Hinde, therefore, does not understand why a process such as that described by Mr. Johnson as having been tried at Newcastle should have been patented.

Opening of Public Baths for Stroud.—The public baths just provided for Stroud by a company headed by Mr. Dickinson, M.P., are now practically open. The Turkish bath is heated on a patent principle, providing a constant supply of fresh air from windows, which, in passing through the apparatus, can be heated to any temperature up to 200 degrees. Under this principle of heating the oppression usually experienced by persons in most Turkish baths is said to be avoided. The swimming-bath is fitted with a shower in its centre, which keeps the water in continual motion. The cost of the baths is about 1,500*l*, subscriptions from shares and donations amount to 750*l*; and there is therefore a deficiency of 750*l*.

Strike in the Building Trade in Edinburgh.—Messrs. Beattie & Sons, while building under contract the new city porchouse at Grassmarket, were met with a demand on the part of the men for an increase of a farthing per hour in their rate of pay. The masons were then receiving 6*d*. per hour, and 6*d*. was demanded. As the Messrs. Beattie were, in terms of their contract, compelled to have the porchouse erected within a specified time, they acceded to the demand of their men. The porchouse is now finished, and a few weeks ago Messrs. Beattie intimated that they would again reduce the rate of pay to 6*d*. per hour. The men objected, and about 130 have struck work.

Society for the Encouragement of the Fine Arts.—The first conversation for the season was held on Thursday evening, 27th inst., in the Gallery of the Female School of Art, Queen-square, Bloomsbury. On the 10th of February Mr. Hyde Clarke will lecture on the Culture of the Fine Arts in its influence on industrial progress.

Wanton Mischievous.—A few nights since a gang of roughs smashed the stained-glass window and otherwise damaged the edifice of Heath Church, near Leighton Basset, Beds.; previously to this they unhinged every gate between the two places, pulled up turnips, unearthed potatoes, and threw stones into the bedroom windows of peaceful inhabitants.

Paper House.—The American invention for paper building material has been recently tested in Chicago, with the result, we are informed, of establishing its utility. It is said that a house, 22 ft. long, 16 ft. wide, and 14 ft. high, can be covered on the outside for less than 90 dollars; and a house 16 ft. by 22 ft., and 20 ft. high, for 20 dollars.

Columbia Market.—The twenty-four iron pillars have been erected in the centre square, and the cross-beams are already placed; and by the close of this month "the covering-in" will be completed. There will be a stand or rostrum at each of the corner pillars, for artists respecting the winning of the corner square will be unshuffled ever, and the market lighted.

Her Majesty's Board of Works.—Mr. Ferguson having resigned the office of Secretary of Works, under the Board of Works, it has been resolved to appoint an engineer. The duties of the works and buildings in connexion with the public service. Capt. Galton, C.B., F.R.S., has been appointed to the office of Director of Works.

Art Workmanship Competition at the Society of Arts.—In response to the offer of prizes issued by the Council in 1869, 143 specimens have been received for competition in the various subjects for which the prizes have been offered. These articles will shortly be arranged for exhibition in the Society's great room.

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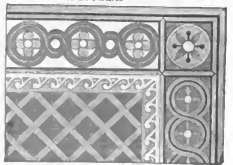
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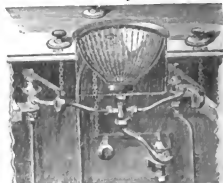
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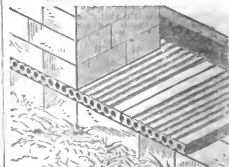
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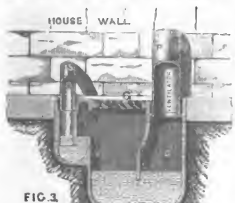
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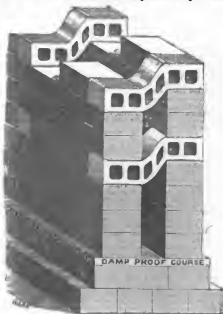
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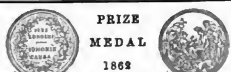
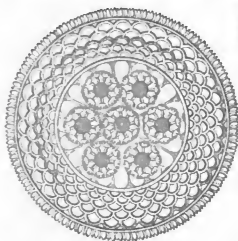
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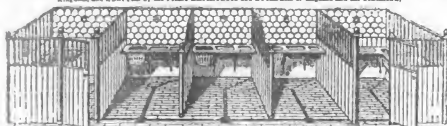
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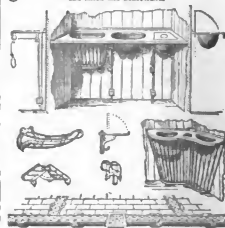


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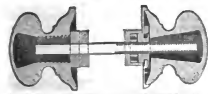
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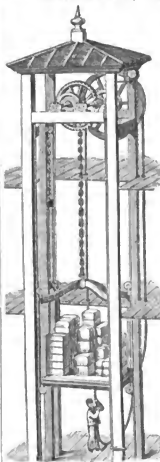
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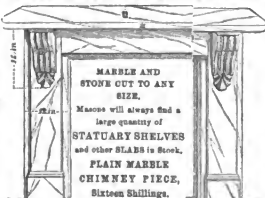
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VOL. XXVIII.—No. 1410.

A Visit to Bethlehem.



THE most sacred spot on earth after Jerusalem, the place of sepulture of our Lord, is Bethlehem, His birthplace. There are doubts about the exact site of the holy sepulchre, but the same degree of uncertainty does not exist about the grotto of the Nativity. It has been urged by some that a cave underground could not have

been used as a stable; but those who have travelled in the East will be able to remember many towns and villages built upon rock in and around which are caves used by the inhabitants as stables and pens, for their horses, asses, cows, and sheep. The fact of the grotto being underground is easily explained when we consider that even in the course of a century the level of the ground in the vicinity of the dwellings of men is perceptibly raised by the accumulation of debris of all sorts, and that therefore in the three hundred years which elapsed between the commencement of the Christian era and the period when St. Helena erected the basilica over the grotto, there must have been some such raising of the soil. We know that this was the case at Jerusalem, and that the holy sepulchre was buried beneath heaps of rubbish until the time of the Empress's visit. Then everything was cleared away, and the rock cut to a level all round, to admit of the erection of a sanctuary surrounding the tomb; but here the Empress or her architect found it a better plan to build over than around the grotto, in such a manner that the high altar should stand above it. In addition to the evidence of common sense, we have the testimony of reiterated tradition in support of the authenticity of the site.

But beyond the sacred associations connected with the place, it has an especial interest for the architect, arising from the fact that the church itself is the earliest basilica in existence, and the only one which has come down to us in an unaltered condition.

Sta. Maria Maggiore and San Giovanni in Laterano have been so frequently rebuilt, and are so overloaded with extravagant ornamentation, that but little can be traced of the original structures beyond the plan. San Paolo fuori le Mura, as we know, has been lately reconstructed. San Clemente and Sta. Agnese preerred many of their primitive features, but have still ordered many alterations since the time of their foundation; and the Church of the Holy Apostles, built by Constantine in New Rome, and his basilica at Jerusalem, have totally disappeared, but the church of Bethlehem remains as it was left by the Empress; the only addition being the internal mosaics of the twelfth century, a modern roof, and a monstrous wall, which has been built between the nave and transepts as a barrier,—a practical and tangible excommunication of the Greeks by the Latins, or of the Latins by the Greeks.

Perhaps the church owes its preservation to its being situated in a village and not in a city, as in the case of many of our village churches, which have escaped; while our cathedrals, one and all, have suffered at the hands of the destroyer or *soi-disant* restorer. We remember, on the occasion of a visit to the Church of Dôl, in Brittany—a cathedral situated in a small town,—being delighted with its untouched condition. No new work was to be seen either inside or out, and the columns of the nave had here and there an attractive tint of green mould on them. The worthy curé, who accompanied us, did not, however, share our gratification. Our town is unfortunately so poor, said he, that we cannot raise a sufficient sum to enable us to gain a grant for the restoration from Government. "*Tant mieux pour vous et pour votre église*," was all we could say to our astonished clericone. His mind, like that of many other pastors, both in France and England, was bent upon the attainment of something new,—of scamped walls and mouldings, daisy tiles and tawdry decorations, and the classification of his church as a *monument historique*. Like the Cathedral of Dôl, the basilica of Bethlehem probably escaped on account of its somewhat remote position in a poor village.

Such being the nature of the interest attached to Bethlehem, our readers, probably, will not object to accompany us on an excursion thither. Bethlehem is only about two hours' ride from Jerusalem, and the trip may be made in peaceful times without an escort,—at least, we found by experience that it could be; and since the time of our visit, we hear that the Bedouins do not, as they did formerly, approach the walls of the Holy City, and pick up the incautious stragglers, being deterred by a wholesome dread of the breech-loaders with which the Turkish army is in part armed.

We left Jerusalem by the Jaffa Gate; but instead of following the Jaffa road, which runs beside the city walls, and then turns to the right over a high ridge, we descended into the valley on our left, and after passing an empty reservoir, the Birket Es Sultan, at the bottom of the valley, began to ascend near a row of ugly cottages, built by that benefactor of his race, Sir Moses Montefiore, as almshouses for his poorer compatriots, and so reached the summit of the hill situated on the south-east side of Jerusalem, adjoining that of the Hill of Evil Counsel. On turning round towards the Holy City, we had a view, interesting indeed, but inferior in interest and in beauty to that which is obtained from the Mount of Olives. Before us lay a ravine, the valley of Hinnom (on the sides of which grew a few scattered olive-trees), which deepened as it proceeded towards our right; and immediately opposite, upon a rocky eminence, about as high as that on which we stood, was the south-east angle of the city walls. Not far from the angle rose the towers of the Citadel of David, and in front of the wall, on the shoulder of a hill, stood the building dignified by the title of the House of the Last Supper. Immediately inside the walls were the roofs of the Armenian convent; but few roofs or minarets were visible as the city falls off from this, its highest point, towards the valley of the Tyropœon.

Pursuing our road towards the east, we soon came upon a tract of barren table-land, through the midst of which the road ran in a straight line. This plain was treeless, and at the season in which we visited it—autumn—without signs of vegetation; so that we were not at all sorry, after about three-quarters of an hour's ride, to reach a wood by the road-side, in which we saw one or two encampments occupied by consuls, who wisely take advantage of the fine autumnal weather to get away from the dust, dirt, heat, and bad water, all which, towards the end of September, render a residence within the city walls almost insupportable. Opposite the wood

was a large Greek convent, dedicated, like many of the Greek churches, to the Prophet Elias, who is especially venerated by that community.

At this point we turned to the right, and entered a road running along a ridge, and skirting a deep ravine which lay on our left hand. We soon observed on our right a small domed building,—of no great antiquity itself, but marking the site of one of the landmarks of the ancient world,—Rachel's Tomb, about the situation of which Christians, Jews, and Mahometans are for once agreed.

A little beyond this point we saw, crowning the summit of the opposite side of the ravine,—which, on account of its numerous terraces covered with vineyards, presented a striking contrast to the valley we had left an hour or so before,—the village of Bethlehem, which no doubt obtained its name,—signifying in Hebrew, house of bread, and in Arabic, house of meat,—from the fertility of the district in which it is situated. Conspicuous amongst the buildings was a vast battressed edifice at the edge of the ravine,—the Convent of the Nativity,—which no doubt will be the principal feature in Holman Hunt's forthcoming view of Bethlehem.

In half-an-hour's time after our first view of it we reached the village, and seeing no visible sign of the Basilica, we made our way to the convent, and, upon stating our wishes, were immediately conducted to the guest-chamber. On our way thither we passed through a bare-looking cloister, the floor of which was stained with the purple juice of the grape. A sturdy peasant, with naked feet, was employed in treading out grapes in a large wooden trough, and this view of the preparatory process did not certainly act as a shoeing-born when we had wine set before us by the hospitable monks.

We were agreeably surprised to encounter in the guest-chamber two Englishmen who had accompanied us in our ride round Jerusalem some days before. They, however, had done all the sight-seeing, and were on the point of departure for the Dead Sea; so that we had not the pleasure of their company in the church. As soon as we had finished our frugal repast, we followed the monk who had been deputed to guide us through the cloisters and surrounding chapels, and finally emerged on the south side of the chance of the basilica. Here we must confess that at first we had some difficulty in orientating ourselves, as the monstrous wall-screen before mentioned as cutting off the nave from the transepts had quite altered the internal aspect of the church. Entering a small door in the wall of the substructure of the choir, we descended by a flight of eighteen or twenty steps to the grotto of the Nativity, which is situated, as far as we could judge, under the high altar. This grotto has been so frequently described, and with such accuracy, that we need only say that it is a natural cave, about 36 ft. long by 12 ft. wide, and 9 ft. high, and that it has been so thoroughly cased with marble that but little, if any, of the live rock is visible. Another staircase led us past other chapels and caves into the opposite side of the church to that from which we had descended. Here we had an opportunity of examining the building more at our leisure. It is cruciform in plan. There is a wide nave, with double aisles, and eleven bays, marked by monolithic columns, about 18 ft. high, with Corinthian capitals and bases. The columns support a regular entablature, consisting of an architrave of three fasses; a frieze, enriched with sculptured foliage, and a rich cornice. The capitals are quite classical in character, and would not have disgraced a pruder period of architecture; but the overloading of ornament on the frieze and cornice shows a considerable departure from the simplicity of earlier times. The transepts are of the same width as the nave, and terminate at the north and south ends

in semicircular apses. The choir has two bays with aisles, like those in the nave; at the east end is a semicircular apse. There is a row of plain windows in the clearstory. The wall space above the architrave and between the windows is occupied by a series of mosaics, representing biblical subjects, executed in the twelfth century. The roof, which is of cedar, is of the sixteenth century.

It is almost superfluous to allude to the statements made by some authors, upon the authority of Munkish historians, that the church was rebuilt by Justinian; for, as will be perceived from the foregoing description, the character of the architecture entirely contradicts it. The trabeate system here observable died out in the time of Constantine, and was replaced by the arcuate system, which became universal before the time of Justinian. In truth, the architecture of the basilica approaches good Roman-Urban more than that of any other edifice erected in Constantine's reign; and in style it is superior to the contemporary buildings at Rome and Constantinople; for in those cities the materials employed in the erection of new edifices were taken from the temple and other ancient structures; consequently, we find them adorned with beams too large or too small, for their respective columns, and architraves, friezes, and cornices squeezed into positions for which they were never intended; while at Bethlehem the columns, which are all monoliths, were evidently quarried in the neighbourhood, and the capitals sculptured to fit the near the building for which they were destined.

There has been an atrium before the church, but there are few traces of it now.

Upon entering the nave, we were surrounded by a crowd of hoisterous ragamuffins, who seemed to think it was their duty to pester and chase their stock of roaries and carriages in mother of pearl; and who, when we had selected one of the latter, fell upon the favoured mortal who sold it to us with such violence that we could not help exclaiming, as we forced our way through them,—“Are you Christians, and of Bethlehem?”

THE ABNORMAL DEATH-RATE IN EDINBURGH.

THE death-rate is assuming a very curious aspect in Edinburgh. Last week we noticed a letter on the subject, which had been addressed to the Lord Provost (Law) by Mr. Thomson, a Scottish actuary, which showed that the death-rate of Edinburgh for a given period was only exceeded by two of the large cities of Europe, viz., Glasgow and Berlin. The former city being the highest. On the same day of publication it happened that a leading article appeared in the local *Daily Review*, commenting on the same phenomenon in strong terms; and, from a paragraph in the next column of the same journal, we gather that the author of this article is the editor himself, Mr. Henry Kinglake. The paragraph in question goes on to say that:

“Since we wrote the leading article this morning, we find that, for the week ending the 29th of January, Edinburgh has not only surpassed herself, but every other place in Europe. The death-rate here is 47, while Glasgow is only 38, Berlin 30, London 29, and Portsmouth 23. We now know the real state of the matter, and the Editor of the *Review*, and mean to speak of it. What will be the death-rate in the new workmen's houses which are building in that quarter?”

Once more, still on the same day, the *Scottishman* gives prominence to the following paragraph, which, while admitting the truth of the weekly statistical returns of the medical officer of health, tries—unsuccessfully, as we think,—to palliate their logical effect by an attempt to deny the truth of the census figures of 1861:

“The high rate of mortality in the city during the week, indicated by the returns published by Dr. Lister, the medical officer of health, has created a good deal of anxiety in the public mind, and it is not surprising to call attention to some facts which may tend to allay any unwarranted fears that may exist. It is now pretty generally admitted that the population of Edinburgh was considerably underrated in the last census returns, and consequently any comparison of the death-rate with that of other cities places Edinburgh in a somewhat unfavourable position. A death-rate of 44 per thousand, even putting the population considerably over the present rate, is, however, not unduly in excess of the average; but it will be observed that the proportion of preventable disease is considerably less than in 1861, there being at nine cases of death from fever, six of which occurred in the New and three in the Old Town. The highest death rate to be found among the cities of the United Kingdom, while there has been an unusually large number of deaths among the poorer population, and those verging on pauperism.”

Finally, one or two of the magistrates and town councillors have also printed letters and

pamphlets on the subject; and, in fact, the inhabitants of Edinburgh, and the strangers who are resident in that city, seem to have become thoroughly alarmed at this unwanted and abnormal rate of mortality.

The condition of Edinburgh is not a new subject with us, as our readers are aware; although many of our suggested improvements have been treated with a sort of Cassandra-like indifference, if not with actual neglect. Only about a year ago, for example, to go no further back, we pointed out several circumstances concerning the sanitary condition of the town of Edinburgh. Mr. Cantelmo, who we have shown, in the first place, the urgent and imperative want of a liberal supply of water; secondly, of more water-closet accommodation in the closes of the old town; we then referred to the sanitary condition of the New Town of Edinburgh as being, comparatively speaking, as much in want of sanitary improvement as the Old Town itself; and, finally, we pointed out that no attention was bestowed on the disgusting condition of the gasworks and irrigated meadows, and of their evil influence on the Palace of Holyrood; besides pointing out, as best we could, the need of the Medical capital to a new site; and the urgent need for improvement in the whole system of the drainage of the city.

It is the misfortune of all true disciples of the modern science of sanitary economy that their labours constantly bring them into dangerous collision with the novelists and the poet. The story which we have to relate, however true it may be, is always dull, prosaic, and uninteresting. There is no romance about it. On the contrary, it frequently becomes a duty to destroy, in a great measure, the preconceived and popular ideas with regard to a picturesque city like Edinburgh, which must pass for a picturesque circumstance of its being built upon a rock, should at the same time be salubrious and healthy. And the capital of Scotland is so surrounded with romantic associations, natural and artificial, that whenever we come to report on its actual condition we are, in all probability, accused of a suppressio veri or an exagium laudis—a deed of either withholding our admiration, or of positively perverting the character of the place. We cannot do better than enter once more our strong disclaimer of any such intention. Although it has been, and will be, our study, to tell some disagreeable truths concerning this city, yet, if we have always endeavoured to do so as temperately as possible. Our business is to deal with principles, whether of local or central administration or of popular practice, and if we can show these to be antiquated or injurious to the cause of progress and public health, the fault is not ours if we are not unpleasingly so.

Edinburgh, in fact, even with regard to its recent sanitary legislation alone, and totally irrespective of its being the capital of Scotland, is a city which no denizen of the British Empire can regard with indifference. Occupying not altogether unworthily one of the finest sites of which a modern European city can boast, Nature has also been profuse in supplying it with the best of all our building materials. There is no sandstone with which we are acquainted superior in point of quality to that of the Craigleith, Binnie, and Redhall quarries; and, putting the immense cost of the quarrying out of the question, it may be added that when occasion serves there is no better building to be seen anywhere than in Edinburgh. It is true that the division of labour is not carried out to the same extent in this northern metropolis as it is by the English, and more particularly by the London builders. But that it is neither here nor there. Those who have examined the ashlar work of the Register-office and the Edinburgh and Glasgow Bank, the rubble work of the Edinburgh prison, or even the brick work of the India-rubber manufactory, will speedily arrive at the conclusion that in Edinburgh there is no lack of the new town, and a lack of high mechanical skill in her building trades.

Nor is it possible to find fault with her present race of architects and engineers. Faults have, doubtless, been committed, and grave ones, in her execution, in the mere planning of the streets and buildings of the new town; and most of the principal streets and squares, although spacious and handsome, are tame and monotonous in their design and construction. Hospital construction, which has reached one of its highest forms of development in Edinburgh, does not exist in medical hospitals, but a curiously connected series of palatial edifices, certainly ornamental to the city, the ostensible

purpose of which is to give a limited quantity of accommodation to a small number of healthy boys or girls, and their teachers, regardless of expense. Accordingly the whole funds nearly are lavished on the external walls, and on heavy, florid, and cumbersome enrichments. Hence, while speaking with a certain qualified admiration of the construction and design of the houses, if only the genius of their country or its climate—we do not know which—would permit them to get rid of the dangerous and unwholesome practice of planning common stairs.

These common stairs lead to much of the high death-rate of Edinburgh; and are, we can confidently assert, from repeated and painful examination, nothing more nor less in most cases than a common nuisance. They are never clean, seldom ventilated, and almost always have the water-closets, if there be any, communicating with them.

The house-drainage of Edinburgh is also sadly defective. Even in the best streets of the new town those pestilent abominations which we term “cesspools” are still commonly employed and connived at by the local authorities. Illustrations of these will be found in a previous volume. But the drains upon the whole seem to be much superior to the common sewers of the city. A report of one of the principal sewers of the southern districts lately published shows that it is in a dangerous and disgraceful condition.

As to overcrowding the population, we must leave the Old Town; but with regard to it we shall be very brief. So much has been said and written of late about the architectural beauties and blemishes of these ancient and dingy remnants, that we may assume this subject to be well enough understood. Besides, when we find a community fully alive to the evils under which they suffer, and doing their best in the shape of loving assessments, and trying otherwise to effect what Lord Provost Chambers calls “a perfect cure,” we must confess that we do not think ourselves justified in taking up minor defects, or squabbling about minor architectural details. As to the latter, we must be said that the Edinburgh people are at length thoroughly ashamed of the Old Town and its insufferable nuisances. Indeed, they seem almost disposed to raise the old closes to their foundation rather than be longer annoyed by them. But we are afraid it is not for poor Edinburgh that any unpleasantly startling cavalier fashion. Even with Mr. Chambers's comprehensive scheme,—which will cost, it is estimated, 300,000, for the mere acquisition of old property and laying out of new streets, and which will occupy upwards of thirty years to complete it,—even with this scheme carried into effect, by far the greater bulk of the densely-populated quarters of the Canongate, the High-street, the Cowgate, the Grass-market, and the West Port, will still remain in their pristine condition, and therefore still continue to exercise their fatal influence on the statistics of poverty and disease, as well as disease and pestilence.

In order to give some idea of the condition of these tenements, we shall extract from Dr. Beggs's little book on “Working Men's Houses” some statistics which bear on the question. The details of the whole of this part of the last census have not been tabulated, we are told, in regard to the principal towns and country districts of Scotland, “in consequence of the parsimony of the Government and the indifference of the people.” But they are given in regard to Edinburgh and Glasgow, and are, no doubt, exceedingly important.

Edinburgh, 121 families live in single-roomed houses, each without a window! It further appears that 13,909 families in Edinburgh, representing at least 50,000 of the inhabitants, live in houses of only one apartment each. But even this does not indicate the full amount of mischief; for 1,530 of these have from ten to fifteen inhabitants residing in each (census, 1861). This, we must admit, at once presents a most shocking state of things; and putting aside the abstract question of supplying houses to this class of the population, which we shall not discuss at present, although it constitutes part of the late Lord Provost's programme, we ask, in all humanity, how such an unspeakable quantity of abomination as this

overcrowding must represent should be tolerated for a moment at Edinburgh? It is now some years since we indicated the only absolute remedy for it, which is simply that those tenements ought to be as regularly inspected as the common lodging-houses. It is no proper answer to this reasonable request, which we have more than once heard cropping out, that we "shall invade the sanctity of the domicile." No philanthropist or humanitarian can possibly have a greater respect for domestic liberty and security than we have; but the conditions of the social contrast, so to speak, are entirely changed when this domicile is transformed into a den of thieves or a habitation of malign influences; we therefore earnestly and sincerely recommend the Edinburgh authorities to give some attention to the necessity of inspecting these over-crowded tenements.

As to the method of surface cleaning, out the closes, to which we have often referred, there can be no doubt whatever that it stands in great need of reformation. It is quite true, we believe that considerable pains are taken by the scavengers to remove the surface ordure every day. And if the theory that the poor inhabitants who are supposed to carry their pails down the interminable stairs to the police-carts at certain hours were actually borne out by the facts, then it might be admitted that the system of cleaning these closes is, practically as well as theoretically, what its supporters claim for it, the best system, not only for Edinburgh, but for other large towns of the kingdom.† But the difference between the beautiful city of Eden on paper, as Charles Dickens describes it, and the beautiful city of Eden in fact, is not greater than that which exists between the theory of the local authorities and the practice of the poor inhabitants! Not our experience alone, but the attested testimony of Englishmen who have ever looked into these dark, dingy, and pestiferous alleys, goes to prove that not so much during the day perhaps, but almost invariably during the night, they are literally converted into the purposes of open sewers! The smell, after a certain hour, is literally the worst thing in its way we have had the fortune to encounter. The fact is there is no use setting down a close as being in impossible conditions, and expecting us to believe they are complied with. Acts of Parliament are of little use; Police Bills, as Tom Hood says, are *pygmalion*; and even punishment ceases to have its terrors. In the first place, to carry down a pail of putrid filth ten or twelve stories might be, and is, we believe, generally done by their ghastly barthen, up a close 300 ft. in length, with a gradient of 1 in 5, in order to wait there for the police-cart, is a thing which they will not do, and which almost nobody expects them to do! Secondly, this surface-filth, of which there may be several thousand square yards collected every morning by the scavengers with wheel-barrows, constitutes a most miserable element of the city revenue, under the head of farm-yard manure; and although we have not been able to ascertain that such is the case, we have no doubt that it is sold separately and at a higher price than the other heterogeneous ingredients of which that commodity is composed. If so, of course the authorities would be interested in obtaining it pure and simple, and hence they might be supposed to conceive even at a system of surface cleaning of their own ordinance. As we have said, we do not know such to be the fact; all we can say is that the results look uncomely like it. In the third place, as we have previously pointed out, the water-supply to these closes is so scanty and insufficient as to make it a disgrace to the city; and this fact of itself is sufficient to account almost for the correlative parts of the phenomenon.

Indeed, we never mention the Edinburgh Water Company without experiencing a certain degree of regret, as well as a disposition to find fault. There can be no doubt that it is well managed, that its interests are carefully protected, and that it had all the legal right to sell its water to the best advantage which repeated

Acts of Parliament could confer. But as a joint-stock company of private traders, looking more to their own interest than to that of the community, and particularly the poorer classes of the community, we could not do otherwise than support the principle which ultimately led Parliament to hand over its property and vested rights to the town council. Let us hope the change may be for the better. Let us hope the municipal government of Edinburgh, under the guidance of Lord Provost Law and his able legal advisers, may rise to the occasion of this warning death-rate. It has been jokingly said that Edinburgh is this moment "under the reign of Law" let us hope the expression may not undergo a change to "the reign of Terror."

THE EXCHANGE BUILDINGS, LIVERPOOL.

THIS large and important pile is now as nearly as possible completed externally, so that an idea of its general success as an architectural design can be formed. Occupying three sides of a large quadrangle, the fourth side of which is filled up by Wood's pleasant and artistic composition, the Town-hall, and in the centre of which is Nelson's monument, an unusually good specimen of composition, motive, and outline in this class of work, it may be said that few large buildings have been recently erected under more advantageous circumstances for the attainment of a striking and dignified architectural effect, so far, at least, as size is concerned. The requirements of the building, however, have in some measure stood in the way of the architect. The best point about the old quadrangle,—viz., the heavy rusticated open arcade, with its massive piers and deep shadows between, which formed the ground story of the building architecturally,—is replaced in the new building by an arcade covered way running around the quadrangle, but standing out from the line of the main building; to which it forms, in fact, only a continuous portico, with a glass roof, to admit light to the office windows, opening upon it. This was almost necessary, in order to obtain a sufficiency of light; but it certainly has not the fine effect which a real arcade ground story would have had; although the new arcade, with its rusticated piers, flanked by sub-arches of granite, is a picturesque and piquant in design. A little colour in the glass roof might have been introduced with very good effect, and would also have given a little more shadow within the arcade.

The general style partakes most of French Renaissance, with a very obvious air and outline about it. In the centre of the west side of the quadrangle is the entrance to the great news-room, through a vestibule with a tiled ceiling very rich in colour. The news-room is, taken altogether, a very fine room; a large square area, with galleries on two opposite sides, and lighted from a large glass dome in the centre, which, however, rises in rather an unsatisfactory manner directly out of a flat ceiling. Were the dome not entirely glass and iron the effect would be very bad; as it is, it is less objectionable in appearance. The ceiling springs from the wall in a cove of considerable radius, intercepted by real or apparent vaulting-ribs springing from the pilasters which divide the wall-space into compartments, thus leaving the cove, in fact, a series of pendentives, the tympanum between which are filled in with alto-relief Biblical designs of considerable interest; the only drawback being that owing to the position of these designs with regard to the cove overhanging them, the upper half of the figures is in perpetual shadow, the light from the dome not reaching them directly. In the centre of the north side of the quadrangle the composition is emphasised by a projection to the level of the arcade and a large roof, and under this centre is a broad passage right through to the street outside, the height of the ground story, the floors above being carried on stone columns which had the same purpose and position in the old building, save that they then stood on the ground level and carried a vaulted ceiling, whereas they are now elevated on pedestals and carry a flat ceiling divided in panels by soffite crockets at right angles, and meeting rather awkwardly upon the broad flat abacus at the head of the columns. The elevation of the columns on pedestals is an improvement, but we should have much

preferred to see shorter new columns (or the old ones shortened), and a vaulted ceiling as before; more might certainly have been made of this passage-way if so treated. The internal arcade on the north side is continued under the east block of building to form another exit into Exchange-street East, through an archway with a heavy archivolte springing from brackets and trusses. At the north-east external angle of the building a feature has been added not contemplated in the original design; the angle is a rounded one, and above the roof-line rises a small circular tower of the same radius on plan as the sub-structure, and capped with a pterocarp, somewhat Chinese-looking, conical or bulbous roof. A feature here was wanted, but it is a pity this was not foreseen, as, of course, the present tower is a kind of sham, having no basement of masonry except on the external side which comes down to the ground; and this is so palpably the case, that the design above the roof should, at any rate, have been as light as possible, both in reality and in appearance; whereas, in fact, it is almost solid wall all around, only broken by four small windows alternating with four pilasters of very slight projection. These slightly-projecting pilasters are a feature in the building, and proper, indeed, to the style, but such a very slight projection is detrimental to the effect of dignity and solidity. The predominant effect of the pilasters is to the lower portion of the building, too, does not please every one; but as to this feature in architecture tastes differ. There is some sculpture on the internal facade, by Mr. Woodington, of London, worth notice. Over the centre of the north side is a large tympanum, filled with a design representing Philosophy sending out Commerce and Science (we believe), to enlighten the masses and ameliorate the condition of the most advanced nations of the world, who are shown springing forward to receive these emissaries; a composition which is not only notable for a considerable breadth and dignified simplicity of treatment, but also has the merit (rare in sculpture of this kind) of really telling its story, and expressing its general motive clearly and intelligibly; though it was hinted to us that Philosophy was not very much known on the Liverpool "flag," which may be the reason she has been "skied" at the top of the building. In a smaller tympanum, on the west side of the quadrangle, are figures said to represent the four quarters of the globe, and we see no reason why they should not; the Yankee and African types are, at all events, apparent. A smaller tympanum on the opposite side shows Raleigh, Drake, and Cook consulting together for the good of their country,—an anachronism which was scarcely necessary. Was there no other Elizabethan worthy who might have made a third with Raleigh and Drake? Let Mr. Kingsley or Mr. Frodus answer for us. There are also six small figures at the level in the quadrangle—two, those of Galileo and Mercator, over the central passage on the north side, two very dignified figures; the other four standing out, on the east and west sides, upon the front wall-line of the arcade; on the west, Drake and Columbus; on the east, Raleigh and Cook, the keen, eager face of the latter making a capital support for the sculptor, which he has well availed himself of, and the treatment of the costume being very successful as a combination of realistic with artistic effect. We regret we cannot say so much in praise of the sculptured ornament on the building; not that there is any fault to find with the execution, which is clear and sharp enough, but that much of it is of a type somewhat commonplace, and which we had hoped we were getting rid of in the wreaths and festoons, in "the old Roman way."

With regard to internal plan, the staircases are very light, airy, and commodious, and there are some very good offices in the building; but, from what has been said to us by commercial men on the spot, we should fear that the architect has made his rooms a little too deep in proportion to the size of the windows, in many cases, for them to prove convenient working-rooms for a large staff. But really the problem how to make an architecturally successful building, and yet give the amount of light which cotton salesmen seem to expect, is a task almost beyond the ingenuity of any architect. Taking the building as a whole, it is an interesting piece of architecture. There are, as we have said, some rather commonplace details in it, but nothing that could be called "vulgar" about it (and of how many modern buildings of this class can we say so much?) and it has not

* *Full Report of the Royal Sanitary Association, 1861. Compare further "Another Blow for Life," London, 1864. The *Stretton*, it would appear, adopted our views to a limited extent only. See that paper, March 1865.*

† The system of cleansing pursued in Edinburgh (which I am prepared to prove is not only the best adapted for Edinburgh but for other large local counties in the removal of all refuse and filth, which, if not passed into water-closets, is ordered to be laid upon the streets,"—*Dr. Edinborough's Sanitary Report*, p. 106.

* A view of this will be found in a previous review of the *Builder*; also a view of the entrance of the building.

only a generally picturesque appearance, but there are many little "incidents" in the design which are pleasant and original—the treatment of the exterior archways over the entrance for lowering goods into the vaults, the entrances to one or two of the staircases, particularly that out of the western arcade near Chapel-street, with a straight lintel and a granite shaft in the centre—and other bits, external and internal, which might be compared to the cornice for projecting towards the flags from the centre of the north side, consisting of two Corinthian columns standing well out from the face of the wall, with an entablature, and then two similar columns repeated in a second order over them, form a very pretty feature in a bright sunlight; but when we find this feature eliminating in nothing but two scrolls which fall back against the face of the wall, our pleasure is lessened. Had it supported a good group of statuary, this would have made all the difference. So with the large engaged columns on the external north front towards Old Hall-street, which also terminate in nothing but scrolls. Despite of points of this kind, the whole building is a pleasing and picturesque design, more remarkable, however, for a rich and pretty effect than for grandeur.

STATE AID TO SCIENCE.

It would be difficult to imagine a more crude, ill-digested, and we fear, mischievous step than that which was taken, no doubt in all good faith and with the best intentions, by eighteen gentlemen, each of whom writes F.R.S., after his name, on Friday in last week. Those gentlemen waited on the President and Vice-President of the Committee of Council on Education, in the capacity of a deputation from the British Association for the Advancement of Science. Their object was to ask for an appointment of a Royal Commission to inquire into the relations of the State to scientific instruction and investigation. Such an application, if properly defined by the language of those who made it, is without precedent in our country. It does not follow from that fact that it is wrong. Questions such as those of the relation of the State to any members of the community are necessarily, and often very warmly, discussed in our Legislature. Even there, however, it is felt that the more discussion is confined to practical points, and the less men endeavour to lay down theories, the better.

Not only, moreover, was the form of the application manifestly ill considered, but the undesirable spectacle was presented of a wide divergence of opinion, not only among the great body of scientific men outside, but even among the members of the deputation. "We are unable to agree on any principle," was, in fact, the statement of the spokesman. "We want a commission to hear all that every-body has to say, and then to add its own confused and confusing utterance to the general babel."

Earl de Grey said he understood that Professor Stokes did not express on the part of the deputation any opinion as to the two points raised,—Government aid for scientific education, and the mode in which such education should be encouraged. Neither had the professor any opinion to express as to whether it was desirable that Government should aid at all; or whether the matter should not be left to private initiative and support. Their lordships—with as black faces as controversy would allow,—finding that the spokesman of the deputation had then no story to tell, inquired if any other gentleman could explain what they did want.

To this Professor Huxley replied, on the ground that he was especially entitled to answer the question, because his opinions differed very widely from those of his colleagues. He thought a commission would be a very useful body if it could consider the report upon opinions which, at the present, were "scarcely chaotic." For himself he dissented from any Government aid being given to scientific education, and thought that support from the State would lead to "a sort of decorated and endowed idleness." Finally, if the report can be relied on, the professor was anxious for a commission, because it would put a stop to a great deal of discussion which was now going on, which would, he believed, if duly considered, come to an end of itself.

Dr. Williamson expressed an opinion that there were institutions now existing which are not as useful as they might be. Professor Blyth said that there were only thirty mari-

colated students in Finsbury (a point as to which the cruel want of room for those who are actually admitted must have been well known to at least some of those present), and Professor Stokes kept up the general discord by observing that Professor Sylvester was "only expressing his individual views." In fact, each spokesman seemed to be anxious rather to divert into some other channel the support now actually given by the State to scientific instruction, than to agree in any constructive recommendation. Mr. Stokes had a stone for South Kensington, because in that institution "two very distinct things, science and art, were so mixed together that it was not easy to find out what share fell to the one, and what to the other." A study of the reports, or a visit to the schools would enable any one to solve this difficulty.

But there is something more than a display of purposeless divergence of opinion on a great subject, among men eminent in their individual pursuits. The cause of education is perilled by such a display. Never was there a time when it so much behoved the friends of education to stand shoulder to shoulder,—to drop minor differences, and to devote every effort to enabling England to make up her loss way. We have drifted behind other nations in this respect. Even Austria—the Government reports tell us—is before us. Only the Patrimony of St. Peter, out of all Europe, is less educated than England. Commerce and manufacture are showing ugly symptoms of seeking other centres. Education in art applied to manufacture is one great means that we have to arrest this process of deterioration. In that line we are actually doing something, if not all that is desired. We must do more. We must not grudge the seed corn necessary for our future harvests. We must sow broadcast round the land that education for which our industrial classes are beginning so hard to call. Professors may doubt, in the solitude of their lecture-rooms, how far the aid of the State should be given to industrial education. But the artisan does not doubt,—the craftsman, whatever be his craft, does not doubt. They ask for their children not bread, but that technical training and teaching which shall enable them to be enriched by their own hands, and by competition in the market of the world.

The danger is not from behind alone, nor, indeed, in the first instance. It is from above. There may be, and no doubt is, room for very widely opposed opinions as to the policy of the extreme detail of retrenchment attempted by the present Government. But as to the fact there is no doubt at all. Here a limb, and there a limb, and then a whole trunk falls before the axe of retrenchment. It is clear that it is not safe to give any opening for this keen spirit of reduction. Large sums of money are now, in one form and another, devoted to scientific instruction, which would, if not so paid, make a material figure, by way of diminution, in the national balance-sheet. Not it is attributing to a retrenching Government, a virtue and patriotism almost more than human, to suppose that they can resist the temptation of withholding or diminishing any grant which those who ought to be most eager to advocate hint to be of questionable policy. What would be the natural reflection of a Chancellor of the Exchequer? "Shall I spend this large sum, when eighteen F.R.S.s tell me it is perhaps doing more harm than good, to the value of the money? The expenditure is questionable, the value of the reduction is certain. Positive £, s. d. on the one hand, against doubtful moral results on the other. Scratch the grant."

Now, we think that any gentlemen who had come forward with the innocent, and, perhaps, disconcerting, wish that they might direct some rift of the national irrigation into their own particular trench, would be likely to stand aghast at such a result of their pottering with the distribution. As to all that they urge in favour of non-payment, a ready and willing ear will be turned. As to that they urge in favour of payment, they would be on the deaf side of the Chancellor of the Exchequer. As to that there can be no doubt. Men do not absolutely cease to be human when they become Ministers; and to take that part of counsel which suits you, and to forget that part which does not, is human nature. How will these gentlemen resist it, if, among the estimates, the vice-president comes forward to say that a Royal Commission on the subject of education has been suggested by certain persons of such eminence that the Government felt bound to give every attention to their views. These, however, were so absolutely discordant as to show

that any such Commission (even if restricted to the limits of possibility, which the proposed Commission would have altogether exceeded), would be utterly fruitless and unproductive. The very basis of its action were undetermined; formed, as it must be, in order to be fair, from opposing elements, its course would only be one long struggle. Each member would cross-examine each witness in his own sense and in support of his own views, and, as a result, the account was summed up—say, in 1878, or thereabouts—there would probably be at least half as many distinct and divergent reports as there were members of the Commission. Still, as all these gentlemen were of opinion that the relations of the State to education were entirely unsettled, and that it was highly possible that private enterprises, in the matter of tuition, was being strangled and impeded by the State aid that was given in different directions, all that the Government could see their way to do was, to suspend all further grants for educational purposes until Messrs. Stokes and Huxley, Williamson and Sylvester, and those whom they represented, could come together with some more satisfactory result than that of ventilating their individual differences of opinion in the presence of the department.

We believe it would be more startled at such a result than the eminent persons who so unfortunately agree to divide. But we put it to them: is it not this to which their interview of last Friday directly tends, if it tend to any whitener? Do they desire such an upshot?

THE WATER-COLOUR DRAWINGS AT THE DUDLEY GALLERY.

THE sixth selection from the numerous drawings that are submitted time after time to the committee of taste who are charged with the exhibitions at the Dudley Gallery, indicates as strongly as ever the wide radius of a certain artistic talent,—now a distinguishing mark of the period,—and that a collection of drawings of sufficient merit and interest may be made very readily, with no great help from the professors of water-colour painting whose names are always a promise of attraction, sufficient to satisfy any but the satiated.

A clever, classic representation of "Poetry" (163), is contributed by Mr. E. J. Forster, A.R.A., whose work grows graver every day; and this nearly half-length figure, with its handsome head and dark, dreamy eyes, will help to show how well fitted he is to deal with exalted themes. That in his practice he may adopt any medium, from miniature-stipple to mosaic, may be seen in smaller works here and a larger one elsewhere, which proclaims him by "St. George"—a risen artist.

An illustration from German fairy-lore, by Mr. H. S. Marks, "The Princess and the Pelicans,"—her transformed brothers,—(169), whom, to while away the pains of enchantment, she is summing by reading the romance of Sir Bruno. The pelicans are the very pink of pelicans, and their kind sister, "Pimpinella," a more real-looking princess than one might expect to find in a castle in the air; but then the terrace, with its fountain and the old German buildings, add probability to the story, and make it of more dramatic significance. For who is there who, "would he were a bird," would choose to be a pelican? A decorative design for the Prince's Theatre, Manchester, emblematical of Shakespeare (543), is a very able adaptation to the purpose, very well composed, so as to introduce much of the leading character in the play, and tinted with due regard to lightness and clearness. Mr. G. D. Leslie, A.R.A., lends more than his name, for he has a very broad and agreeable drawing. The pretty little girl in a sun suggests the point of sight from which he got the glimpse of "Bony Vincenzo" (231), with an opportunity of painting still water, and a sword-bank. More delicate, if less powerful, workmanship has been employed on a charming fancy portrait of a "Grandmamma" of years ago, years before she could have been of such relationship, for—

"This relative of mine,
Was once a little girl,
When she died." (112)

is sweet seventeen at most, leaving it very difficult for her to frame an answer to the inquiry. She is very pleasant to regard now in her blue Joseph and spotless cambric neckerchief, though she may have been the very opposite of Mr. J. B. Burgess's devout aun in "The Convent Garden"

(255), of which he has made so forcible a picture. (157) "Study of a Head;" that of an old priest expressive of benediction, by Mr. A. Logros, is suggestive of the strict simplicity of its treatment—its style, that seems to eschew all style. Mr. S. Solomon is seen to best advantage in a small highly-finished rendering of Biblical text, "The Three Holy Children in the Fiery Furnace" (45), which is devoid of any attempt to poetize: the heads of the angels and the mortals immortalized as the accepted type, and there is no exaggeration when exaggeration might have been expected,—indeed, there is need to refer to the catalogue to ascertain what the subject is,—but there is considerable power and completeness of execution to give value to the drawing. "A Young Rabbi carrying the Scroll of the Law" (51) is very admirable for its rich colouring. But to what country, to what period, do the youths and maidens belong who are walking in procession, "In the Summer Twilight" (121), whence do they come, and where are they going? In this, and even to a greater degree in his "Fair of Lovens" (324), Mr. Solomon shows a commendable appreciation of the old master, R. Westall, and the younger originator,—whoever he might have been,—who instituted a peculiar sect of poet-painters: There are instances here, in this gallery, to denote that even a narcotized dreamer might be offered as poetry,—and that narcotic has been tolerated and even praised sometimes; but it is far easier, always, to emulate the eccentricities of excellence than the excellence itself.

It is gratifying to find so many ladies affording assistance to the success of this association for the spread of fine-art taste.

"After the Ball" (in French, with a verse from Théophile Gautier to illustrate), has suggested to Miss or Mrs. (why not made clear in catalogue?) Lucy Madox Brown a fair chance, it would seem, to make a clever picture. A lady who is fond of dancing (Terpsichore) has been how many arms have encircled her waist; but her muslin frock is very rumpled) on her return home, has fallen asleep before her attendant can assist to disrobe her, and with swimming head is waiting again whilst day is breaking to tell her that she was whistled yesterday (15). With a certain amount of good effect the lady artist has told all the circumstance, and it is to be hoped that the bright sunlight to day may bring more invitations to the lady who dances and the lady who paints—not her own face, but others; and some as bright, even though as humble, as "Yacouso" (36), by Miss F. M. Aldridge, to whom the sea-breeze has been the only "cosmetic." But other winds blow fresh complexities, too. Look at Miss Constance Phillott's "Shepherd Swain" (172),

"Piping down the valleys wild,"

although he doesn't happen to be piping, but only preparing to pipe. Miss Kate Greenaway places a young lady near the tree of mitchell, and calls her "Apple Blossom; a Spring Idyll" (153)—a pretty drawing, notwithstanding its green shadows, and though it shows so much command over the porte crayon and brush as the ideal life-size study by Miss Marie Spartali, (368), "The Romanist of the Rose."

Miss Adelaide Claxton relates, with strong light and dark effect, "The Old Housekeeper's" (385), absent the duties of an Elizabethan ancestor, so interesting and horrifying to the younger of the sister listeners that she fancies the ghost of the defunct cavalier to be close behind her; and so he is,—one of Miss Claxton's best ghosts. Miss Florence Claxton depicts a little French Governess, and is well rewarded as an interview for engagement (447); and Miss O. P. Gilbert, a young lady too far advanced to need any such instruction as one of her own age could impart—she is twisting the globe, and going through a light course of "Astrology" that will not cost her a headache (417).

Among some choice specimens of the painting, signed Ellen Coleman, Caroline Eastlake, and others, there is many another clever emanation from lady-artists among the most important items of the collection; for instance, "Lady Betty" (269), by Mrs. Charlotte, so bright and handsome, and Miss Florence "The Girl" of a flaxen-haired child, is as light and lively as those who think her most lovely would wish her to be. Miss Juliana Russell depicts "A Lover's Quarrel" (279), and so well, as to make it interesting to more than a third party; but only so far as a clever narrative can account for, as

"Sudden storms are short,"

the method of relating the incident is of far

more consequence than the matter it treats of. The drapery on the female figure here is especially well done.

"The Pilgrims of the Night" (25) are not to be so easily understood as Mr. A. R. Donaldson's capital studies from positive facts; see (110) "Nuremberg Walls, with the Church of St. Lawrence," with more from the same locality, sketched with vigorous ease, if not with the elegance and extra manipulative care that Mr. G. E. B. similar subjects, "The Citadel of Nuremberg" (63), and "The Old Hospital, Nuremberg" (306), show on his part. Mr. T. R. Macquoid always draws conscientiously and unpretentiously, as the several specimens of his skill to be found here will testify, none better than (32) "Cloister—Padua."

A run through the catalogue recalls numerous works that would serve as proof of an aggregate degree of excellence obtaining throughout the exhibition, with variety to assist in its interest.

Child-life is pleasantly illustrated by Mr. R. T. Waite, whose pink-faced, rosy-cheeked girls are hanging "The May Garland" (26) at a neighbour's doorway; by Mr. W. Wise, who depicts a little girl when "Shy" (43) naturally and unaffectedly; Mr. Briton Riviere, a kind, motherly little body, who is feeding lambs, "Orpheus" (156); Mr. J. H. Lyster, one who would be naughty if she could, for she has been plucking strawberries—forbidden fruit, as the strangled blackbird at her feet clearly makes known—and would eat them too if she were not deterred by "The Awakened Conscience" (425); and by Mr. R. W. Macbeth, who records child apitides to see far in everything, by means of his funny little French provincials, who are all agog with curiosity and excitement to know more about "Des Estrangers," who, fashionably attired, have come to the village church to say their prayers with humbler accents. A very successful drawing this, and an agreeable one to see often.

Landscapes; sea-pieces; rocks, mountains, and hills, are no mean features in this general exhibition of water-colour drawings.

Mr. Roger's view of "Godalming" (16); Mr. J. L. Soper's bit on the "Coast of Genoa;" "Le Port de Genoa" (17); Mr. H. M. Wallum's (37) "Morning Breeze;" Mr. G. J. Lewis's (6) "Sheep Washing, Kent;" Mr. G. A. Snappa's "Richmond Castle, Yorkshire" (90), with (113) "Near Taunton Foliot, Devon," by Mr. M. K. Wimperis; "The Bracken Boat" (129), by Mr. Macmillan again; "Haymaking," "Seastellar" (164), by Mr. C. E. Aston; Mr. Arthur Severn's panoramic view, "From the Shot Tower at Waterloo Bridge" (168); "The Old Town of Moret (Seine et Marne), France," by Mr. G. Mawley (184); "The Lamb's Hill, from Lynn Gywnant" (185), by Mr. T. Dauby, a very good one; "Near Hastings" (186), by Mr. H. Moore; "Cookham Lock, Berkshire" (290), by Mr. J. Parker; "Pendennis Castle, Ebb-tide; Evening" (333), by Mr. O. P. Knight; "Evenings on the Tiber, Rome" (461), by Mr. M. Brennan; "Houses of Parliament" and the "Victoria Tower and Westminster Bridge" (479 and 492); by Mr. W. R. Beverley; "The Babal el Nasr or Gate of Victory, Cairo" (491), with Mr. A. Goodwin's clever hazy landscape "Arundel" (528), are things we saw and noted. Mr. J. Richardson's "Cattle passing the Black-mountain on their Way to the Lowlands" (562), and Mr. H. Hildy's admirable illustration "The Fox and the Sick Lion" (452), lead in their special department.

HOUSE ON RICHMOND HILL.

A commodious dwelling-house, of plain Elizabethan type, has been erected on Richmond Hill, under the direction of Mr. F. H. Groves, architect. It was commenced by the order of the late Lord Justice Selwyn, who unfortunately died before it was completed, and it may be assumed in connection with the residence at Chertsey, illustrated in our present number, inasmuch as it exhibits in parts of the construction, the use of concrete. The basement includes housekeeper's room, butler's pantry, servants' hall, kitchen, scullery, and store-rooms.

The ground floor consists of drawing and dining rooms, library, and business-room (the two latter are accessible from the inner lobby, without entering the body of the house), principal and back stairs, and the first and second floors provide bed and dressing rooms.

As to the construction, the whole of the basement, excepting the housekeeper's room, is arched over with Portland cement concrete. One ceiling is painted to resemble stone.

The whole of the back stairs and offices adjoining, within the outer walls, from the basement to the roof, inclusive, are formed in the same material, viz., Portland cement concrete, and are extended so as to separate the eastern half of the house from the western half; and again the latter (western) half is divided into two portions, the south-west angle rooms being separated by the principal stairs, which, to the height of the second floor, are formed of the same material, from the north-west angle rooms, and by walls on the second floor to the roof. The ceiling of the principal stairs is arched with a flange ribbed ceiling, as are the ceilings of the inner lobby and stair landings.

It is held, and with some reason, that the house is largely fireproof.

"THE PAINTERS' DESIDERATUM."

THERE are many occasions when it is desirable that one coat of paint should follow over another much more rapidly than the medium at present in use permits; and very few occasions when the avoidance of the smell that now attends the operation of painting is not desirable. To meet these desiderata a medium under the title at the head of this notice has been recently patented, and is now obtainable. It is intended for mixing with white lead and other pigments to form paint, in lieu of linseed oil, boiled oil, turpentine, and dryers; and the patentee claims for it that it is perfectly inodorous; that it less than half an hour after application it is sufficient to dry the work to receive another coat; that it does not blister on exposure to heat; that it is more durable than ordinary paint, cleans readily, and is not injuriously affected by soap or alkalis. He says further—

"It is economical in use. In consequence of the 'body' contained in the composition three coats of paint mixed with it are equal in power of ordinary paint; and upon the principle that 'time is money' the great saving in the time always lost by workers in waiting out work is dry, or equal from one job to another, a medium thus sufficient compensation for the greater original cost. For example, a painter who requires the attendance of a workman on five several days to complete the painting and varnishing, can, by the use of this composition, be painted with four in the same time. It is particularly applicable to iron railings and work exposed to the contact of passers-by, rendering unnecessary the costly and consequently wasteful application of drying properties it is not subject to injury by dust or rain, as is the case with ordinary paint."

We have seen for ourselves that the material works very pleasantly, and affords sufficient time in drying for the painting to be properly done. As to its disability we are unable to speak, but we may safely say that if the advantages claimed for it can be maintained, "the Painters' Desideratum" certainly deserves attention.

THE PARIS OPERA HOUSE.

REMEMBERING all the years passed and all the millions spent, most of our readers will be surprised to find that the exterior alone of the new Opera House is approaching completion. The interior is a perfect void: a few iron columns alone mark the position of the boxes and lobbies that are to be. We should think it will be a year before the interior is completed. We obtained a few explicit hints from some of the special favourers, and learnt that any Frenchman applying would be refused point blank. Apparently the powers that be wish to keep the public in ignorance of the fact that the gorgeous facade of the Opera House is a mere empty shell.

ON THE ORNAMENTAL FEATURES OF ARABIC ARCHITECTURE IN EGYPT AND SYRIA.

I PROPOSE to call your attention more especially to the various ornamental features of the Arabic architecture of Egypt and Syria. But in order to do this explicitly it will be necessary for me to touch to some extent also on some peculiarities of construction; and to point out some of the special features and stepping-stones of its development and growth.

It may be broadly stated that Arab architec-

* From a paper by Mr. John D. Crook, read at the ordinary general meeting of the Institute of British Architects, on Monday, the 31st ult.

ture commenced as a distinct style about the middle of the ninth century, a little more than 250 years after Mohammed's "flight," or about seventy years after the famous Haroun al-Mas'oud of the "Arabian Nights."

The earliest Arab monuments in Egypt upon any records of which reliance can be placed are the "Nilometer," first completed A.D. 801, but altered and added to A.D. 872 by "Ibn Tuloun;" and the *Tulun Mosque*, built A.D. 876. As is well known to most of you, both these buildings possess pointed arches, which are often quoted as the earliest known examples in systematic use. In addition to this, however, both present many features which continued throughout the best periods of the style. It may be as well here to note that the *Tulun Mosque* is entirely built of burnt brick "stuccoed" to resemble stone; the ornament, which is of a bold and artistic character, being cut in the stucco by hand—not cast. In both this and the Nilometer the inscriptions are in the "Kufic" character, which bears the same relation to modern Arabic writing that our old black-letter does to our modern type.*

From the foundation of the *Tulun Mosque* about a century elapsed before we arrive at another distinct landmark in Arab architecture. This is the *Mosque of "El Hakim"* (the founder of the Druses). This mosque was founded A.D. 1003, and has much of the same character as that last mentioned, but is richer in detail. The writing here is also Kufic and, intermixed with excellent scroll ornament, forms an admirable frieze. The open parapets here, of simple geometric pattern, are worth attention.

The examples which I have so far quoted, whilst possessing a distinct Arabic character, show almost as wide a difference from the subsequent Arab monuments as our own "Norman" work does from the English work of the succeeding century. A certain massive, heavy appearance distinguishes them; nor was there as yet, apparently any extensive use of the variegated materials which become so conspicuous a feature in the exterior of most of the later buildings.

I may here notice one very interesting monument of Cairo. Close to the "Moristan," and opening to the *Kalouan Mosque*—in one of the most picturesque streets of Cairo—a very beautiful pointed doorway arrests the attention. Many people are struck with it; but the architect must so, for at once recognises the familiar mouldings and grouped shafts of the Early Pointed architecture of Northern Europe. Its history is curious and very interesting. In A.D. 1291 Akka was taken by the Sultan Khaled, the son of El Mansour Kalooun, the founder of the Moristan. Gibson says of Akka (which was, for some years previous to the siege, the metropolis of the Latin Christians).—"It was adorned with strong and stately buildings, aqueducts," &c.; and that, after its capture, "By the command of the Sultan (Khaled), the churches and fortifications of the Latin cities were demolished." He there found this beautiful doorway, the work of grandeur, and removed it to Cairo, where it adorns the mosque which bears his father's name. The Arab historian "El Makreze" speaks enthusiastically of its beauty. I mention this doorway because it

* The modern Arab character was not used at all till the middle of the tenth century. Even then the "Kufic" style was used on buildings erected by the Fatimid dynasty, about A.D. 1170. After that the Arabic and Kufic were both employed. Even as late as our fifteenth century, single inscriptions are occasionally written in both characters side by side.

is earlier than any of the more elaborate Arabic buildings of Cairo, and evidently excited considerable admiration in the Arab mind. An Arabic inscription on the lintel gives the date of its erection as 608 A.H. (or A.D. 1209). The *Kalouan Mosque* was founded A.D. 1286, and completed A.D. 1305. The *Mosque of Sultan Hassan* dates from about A.D. 1354, and is probably the most important of the mosques of Cairo. In it we find the details of Arabic ornament wrought to their greatest perfection. It would be impossible to find, for instance, a more exquisite specimen of writing, treated ornamentally, than the frieze of the great court and above. The scroll interwoven with the Kufic writing is admirable. One door in this mosque is plated, as usual, with bronze in geometric patterns, but has raised bosses, exquisitely inlaid with the most delicate niello ornament in silver.

The noble recess of the main entrance of the *Mosque of Sultan Hassan* is a well-known feature; and its details of inlaid coloured stones, sculptured and interlaced patterns, are among the most perfect examples of Arabian art. The style has here attained its full development; combining, as it most perfectly and highly-finished details with the noble severity of the lofty walls, upwards of 100 ft. high.

We have now arrived at the middle of the fourteenth century (the period of Yusuf's Alhambra). We may turn to the beautiful group of domes and mosques known as the "Tombs of the Caliphs," about two miles out of the city of Cairo. We there find the grand sepulchral *Mosque of Barkook*, a most worthy example for study. This dates from the close of the fourteenth century ("Barkook or Zahir" died A.D. 1399). For breadth of mass and effect, good proportion, picturesque parts, and judicious detail there are few better examples. Here (as in most of the same group of buildings) we find the use of striped courses of dark and white stone.

The *Mosque of "El Moïd"* in the city, with its spacious open cloister and well-proportioned arcades, follows a few years later, about A.D. 1415; and in its ceilings and cornices we find an elaborate specimen of coloured decoration; the coloring being nearly confined to black, white and gold, with a relief of blue and red. Its masonry, both interior and exterior, is of red and white courses; the columns (being, as in very many of the Cairo mosques, borrowed from more ancient buildings) are of red porphyry.*

Then, at the close of the fifteenth century, we have the *Mosque of "El Kaitha"*, who was buried here A.D. 1496 (when the Moors had already been driven from Granada). This is already one of the groups known as the "Tombs of the Caliphs," and at once the most perfect and the most picturesque. It would probably be difficult to find in any country, or in any style, a more charming group of building than this mosque, with its high, graceful minaret, and its delicately-sculptured dome, standing out from the pale desert against the rocky distance. The minaret may, I think, be considered the most elegant of all the Cairo minarets. The detail and interior decoration of the building are worthy of its general aspect. I shall presently refer to them again. With a view to making more clear the various ages of the buildings I have mentioned, I have prepared a table showing their dates, side by side with those of the Alhambra.

* I have observed not only Roman but ancient Egyptian capitals in use as both capitals and bases of columns in mosques.

My object in enumerating the buildings I have quoted is to afford the opportunity of tracing the development of Arabic architecture by means of distinct and important landmarks. The list might be largely increased, and the intervals shortened, but without any very useful result.

It is now my purpose to consider the various details of Arab buildings, which are more convenient to treat where special notice is called for. It is, however, first desirable that I should set before you a few of the leading types of the structures themselves. They may be classed as follows:—"Mosques," "Sebeels," "Gates," "Khanas," and "Dwellings."

The mosques vary much in plan, according to the special conditions of their situation. The original form is an open court, surrounded by a covered, arched cloister of one or more aisles; the number of aisles being usually larger on one side than on the others, as two, three, or even five under the widest corner part in the "Mebrab," or sacred recess, towards Mecca, and the high pulpit ("mimbar"). The decoration is also usually richer in this part. A fountain, or large covered cistern of water for ablution, usually occupies the centre of the open inclosure. This type is taken from the first mosque at Mecca, and examples are to be found in the grand mosques of Damascus and Hebron; and at Cairo, in the mosques of "Amr," "Tulun," "El Hakim," "El Moïd." But some of these, as notably that of Damascus, have the sanctuary altogether enclosed. The second type has an open court, having a central fountain, with one or more large arcades or alcoves opening to it. Such is the *Mosque of Sultan Hassan*. Under the third head may be classed the mosques which are either altogether enclosed and roofed over (of every variety of plan) or are only partially open to the air. A fourth group may include those of the Cairo mosques, which are now almost entirely ruined, which exist in considerable number near Cairo, and have been, in fact, mausolea. Some of these are beautifully and richly ornamented.

The "Sebeels," or drinking-fountains, are very numerous in Cairo, and are among the most striking of its buildings. They are most frequently at the corners of streets, or in prominent places. Below is a single closed chamber, lighted by one or more large metal grilles, sometimes simple, sometimes very ornamental. Within is the water supply, with which a tube communicates, and, terminating in a small brass pipe or nozzle, allows the water to quench his thirst by suction, for the water is rarely allowed to run to waste.

The upper story of these buildings is almost always a school. They have usually been built as an act of charity by some person whose name was afterwards given to the building. "And the Arabs," the thirsty man remembers gratefully the name of the founder; as also does the youth who is trained (and aided) in his school."

The residences, or private houses of Cairo, are of every variety of general plan; most, but not all, of the better class having an open court, into which the reception-rooms open. The other rooms are built with a special regard to privacy. The rooms of the harem are generally on the first floor, and some of these are very handsome. I shall perhaps best explain myself by describing to you one or two of these Cairo houses (built centuries ago, but still flourishing) which I have visited.

I will take first that of Ibn el-Said, the head of one of the oldest Arab families of Cairo, and a rich man. The visitor enters by a double gateway from the street into a large open court. Upon his immediate right a considerable space is screened off by ornamental trellis-work. This is a private mosque, used for the devotions of our host and his household. There are chambers over this. On the left, an upper chamber, having a large window (a very exquisite specimen of the "Mebrabeyeh"), is supported at its outer angle by a single column. The remainder of the court is surrounded by buildings with screened windows, but a deep, open recess, with divans and cushions, occupies the angle furthest from the entrance; a passage near this leads to the garden behind. The grand reception-rooms occupy nearly the whole of one side, the rooms being the full height of the building. These rooms I shall endeavor to describe. In plan they are three; but, except by a step in the floor, and the arrangement of the ceilings, they practically form one large saloon, called *Mandar*.

Entering a small doorway from the court, the first room is lighted from above by an octagonal lantern or opening in the centre of a ceiling of wood elegantly panelled by mouldings into

The Dates of the Arabic Buildings of Cairo, compared with the Alhambra.

Date.	Cairo.	Alhambra.
A.D. 800	Mosque of Ibn Tuloun.	
1008	Mosque of El Hakim.	
1273	...	
1286	The Gothic portal removed from Akka—erected 1286.	Death of Ismael-Tamim at Kuer-J-Hamra. The first Moorish King who reigned there.
1291	"Moristan," and the "Mosque of Kalooun."	
1299	...	
1310	...	Death of Mohammed II, who had continued the building. Mohammed III, erected the "Mebrab-al-jami," described as having "Moorish delicate tracery."
1333	...	Yusuf III. decorated the Courts of "the Fishpond" and "Ambassadors," the "Hall of the two Sisters," the "Bacon," and the "Madrasa." (A.D. 1349).
1354	"Mosque of Sultan Hassan."	
1358	"Mosque of Sultan Barkook."	
1359	"Mosque of El Moïd."	
1399	...	"Boalid" surrendered Granada.
1406	"Mosque of Kaitha."	

geometrical device, and having pendants at intervals. This ceiling is higher than those adjoining. From the ceiling downwards the walls of this, as also of the other apartments, are lined with old Persian glazed tiles—blue and green on a white ground—to within perhaps 9 ft. or 10 ft. of the floor, the total height being possibly 25 ft. of the floor. The lower part of the wall is plain. At the end facing the other apartment is a niche or recess in the wall, with a semi-circular, having shallow steps of marble. This first room is, in fact, an ante-room, or the "darbakh" to the other, called the "leewan," which is entered by a low step, at which the domestics invariably stand off their shoes, even when serving.

In the opening a transverse beam with deep trusses, or brackets, which terminate in corbels of gilt honeycomb work, carries the roof.

In another room large parallel beams or girders, about 12 in. thick, and perhaps 18 in. apart, are carried from side to side. These are elaborately decorated from the ends, the entire length being rounded or octagonal on the lower face. The whole of this surface is decorated with ornament in gold, with grounds of blue or other colour, each beam differing from the next; the chamfering of the ends is also gilt and ornamented. The space between the beams are divided into small squares and oblong panels, the framing of which, as well as the panels themselves, is elaborately decorated and gilt. The whole effect is rich and harmonious to the last degree.

In dining with the master of the house, I observed that whilst we dined in the centre saloon, the household servants (as *we* they *stray* objects of charity) took their meal in the first ante-room, within our view. We afterwards retired to the further bay for the post-prandial ebriosity.

The house adjoining the one just described is at present occupied by Ismail Pasha, who kindly allowed me to see a splendid room on the first floor, the "Kish," a part of the harem. This, in addition to having very beautiful ornamental coloured ceilings, was lined to a height of 10 ft. or 12 ft. by marble, arranged in upright panels, divided by inlaid margins of elaborate design; the whole being surrounded by a broad inlaid frieze, broken at intervals by circles of coloured marbles, somewhat like that at St. John Lateran, at Rome. On one side a cascade fountain is received in the marble wall, and the water from this flows through a narrow channel into a small circular basin in the floor, curiously carved with entwined serpents. From this it again carried to the basin of a fountain in the centre of the floor, the floor itself being paved with inlaid marble.

The next house at Cairo which I shall describe is in a very neglected and ruinous state. It is known as the house of the Chia Mufi, or head magistrate, and seems to have been intended for reception only. It is a very interesting specimen of Arab domestic architecture. In general plan this resembles the reception-rooms or "Mandakh" already described, the ceilings being of the same description. The walls, however, very much smaller. Below the ceiling beams is a wide cove, which is painted in panels with conventional groups of flowers on grounds alternately blue and reddish-brown. Below this the wall surface, for a height of 2 ft. or 3 ft., is painted with rough landscapes of most elementary the basins, and probably of later date than the rest, under which there is a wide frieze of ornament incised in white marble and filled in with black and red cement. The wall below this level is much cut up with doors, windows, and wooden espobards, all of varied design; but the intervals between them are lined with blue and white Persian tiles. The espobards again occur here, and are richly ornamented with gilding and inlaid pearl. The upper windows are filled with beautiful stained glass, in the Persian manner; that is, in a setting of a deeply-oint plaster or cement. The floor, with its central-shaped fountain basin ("fakceyeh"), is an admirable specimen of inlaid marble.

Let us now turn our attention to the interior of the buildings, and observe the decorative treatment adopted. In the first place, it must be remembered that the same use of alternately coloured courses which we notice in the exterior is very frequently extended to the interior; and even where they are not built in coloured material, the imitation is carried out in red and white, or black and white colours. This may be seen not only

in the mosques and other large buildings of Egypt, but in the courts and rooms of the private houses, both of Cairo and Damascus. At the latter place there is scarcely a court of any large house but presents an example of this system more or less consistently carried out; whilst the great "Khan of Assad Pascha," in the same city, although a modern and scarcely "Arab" structure, is a good example of the principle carried out to the end of the capital is not frequently decorated in this system. At the base is a frieze consisting of inscription, either carved or painted, on a dark ground. Over this the upright circular wall (the drum), which supports the dome itself, is pierced with pointed windows at short intervals, or have formerly contained pierced tracery, or have formerly contained coloured glass, which, however, few now retain. The intervals between the lights are sometimes plain, sometimes banded,—in other cases are paneled and ornamented in colour or relief to agree with the windows. The capital itself is often partially banded in white, black, and red, relieved by zig-zag courses; and towards the top has a radiating counterchanged ornament of the same kind as that already described. This is one treatment, and specimens of it are to be seen in the "Tombs of the Caliphs," notably in that of

Occasionally, however, the capital is far more richly decorated. That of the "Kubbet el Fedaweyeh" has a bold and elaborate Moresque diaper in relief, the face of the ornament almost entirely gilt, whilst the grounds enclosed by the leading lines of the ornament are coloured blue, red, and white. The whole is most rich in effect, although, unfortunately, the building is in a very ruinous state. As it is a fine example of the "Kubbet," I will continue a description of its interior ornamentation.

Below the capital windows is the usual frieze of writing, on red ground, and which runs an Arabic free border. From this line the pendentives commence, and the construction of these is very anomalous. Across each angle of the square is thrown a plain pointed arch, the apex of which meets the ring of the dome. The archivolts are in red, white, and black stones. The inner face of the pendentive is decorated with flat relief arabesque in stucco; light on colours ground; as also are all the plain wall surfaces in the same story. The alcove, which is recessed in the angle, is the remarkable part of the pendentive, being constructed on the system of fan-vaulting and meeting an octagonal above. Another free border string course in carving runs round the building from the springing of the pendentives,—the pointed windows in the angles breaking it,—whilst those in the lunettes range above it. The walls of the next lower story are very ruinous, but seem to have been nearly plain, and decorated with small tiles or mosaic inlaid panels; possibly the wall was lined with tiles or painted with coloured designs; but this is only surmise.

The flat ceilings, whether of mosques or other public or private buildings, are treated, without distinction, in one of two or three ways. The handsomest, producing the richest effect, is the beam and panel arrangement already described, which seems to have prevailed largely in mosque, sebel, or dwelling. The finest examples are to be met with in the "Maadid" "Mahmondia" and "Kaidah" mosques; in some of the older mosques in the town of the Sheikh, of the Mufi, and of "Ebn el Sadid," both before referred to. There are, however, many others in the older private houses, but they are difficult to find out and not easy of access, great numbers of the older houses having been destroyed during the last few years.

A simpler form of ceiling is that formed by "beam and match boarding." Here the boarding is probably placed diagonally, and the narrow boards are painted successively in various colours, with perhaps a running pattern of conventional flower ornament, or arabesque, on each beam being elaborately decorated (as in an example at Damascus); or the beam is decorated with rich diaper or geometrical pattern, and the boarding painted in panels without the division of framing.

The flat ceilings in which the beams do not show, but which are divided by small mouldings carved in the beams, or in the walls, or in the decorated in colour, are of great variety. As I have already incidentally mentioned, they occur in buildings of all descriptions, and are used both internally, as the ceilings of rooms, and externally, in the soffits of the "Maahrebeyehs,"

or other wooden structures. Occasionally these are elaborated and enriched by bold pendentives marking the central points of the device; and in some instances this system is combined with the beam treatment, as in the entrance corridor to the old "Moristan," at Cairo. There we find the ends of the beams carved, and ornament carved on the ending. In the same place is a good specimen of wooden cornice formed of a series of polygonal pendentives—a style of cornice to be met with both in Cairo and Damascus (House of Assad Pascha). This is the form of interior cornice, in large buildings, is the bold hollow or cove which is divided by coloured decoration into ornamental panels, with rich borders. Koran sentences, in white and gold, on rich blue grounds, are often introduced in these panels, the surrounding colouring being in more subdued tones, and the top and bottom lines of the whole cornice being strongly marked with black and white, bright red, or other rigorous colours.

Below the cornice is usually a frieze, almost always of writing. How beautifully the Arabic character lends itself to ornamental purposes is well known. Probably in no other style of art has writing been so largely used for this end. For, whether externally or internally, wherever there is a frieze in an Arabic building, it consists of writing. Beautiful effects are produced by intermingling the characters with delicate gold work, the latter being gilt, and the writing white, both on a blue ground, as in the "Mahmondieh" Mosque at Cairo. And the writing itself is often wrought into ornamental monograms, whole sentences being so entwined as to be difficult, even for the expert, to decipher. The same use of writing extends to every object in which Arabic ornamental art is expended. Witness their metal vessels, in which the whole surface is frequently covered with inscriptions. The practice doubtless originates in the preclusion of the representation of animal life; the instinct of the artist to appeal, in every direct way, to the understanding, and sympathy of the beholder being too natural and too strong to be altogether repressed.

I have already alluded to the use of coloured marble inlay, and tiles for the internal wall decoration. As I have shown the taste for mosaic decoration was evidently very strong, and much so than at Cairo; and the examples of real and imitation mosaic are of untold variety. A mosaic of geometric or other ornament, out perhaps a quarter of an inch deep in the stone, and filled with hard cement of various colours—black, red, blue, or yellow—was also in extensive use, and very excellent effect. I must also notice that, at Damascus, interior coloured decoration, of essentially Persian character, exists in considerable quantity. Here the walls are divided into panels by bands of rich colour, the ornament being in slight relief, of gilt, or silver, or white, or blue, and cannot be broken as pure Arabic work. There is another branch of interior ornamental work, which is of infinite variety, and deserves much study. I have already remarked that wood, as a material, must be considered scarce in the region of Arabic architecture. Not only this, but the climate of extreme dryness and extreme temperatures makes its use, in large sizes, difficult or undesirable. Probably, from these causes, all Arabic woodwork is made up of a number of small parts, framing and panels, ingeniously wrought into every variety of rectilinear form, and in the doors, panels, window-shutters, cupboards—all are made of thin fashion; and no two seem to be alike. I agree with those who consider that to this system of woodwork may be traced the wonderful variety of geometric design applied to all materials by the Arabs and Moors. A workman at Damascus showed me a scroll in his possession, containing about two hundred traditional designs of rectilinear geometrical forms for wooden paneling. This paneling usually has the narrow framing moulded, and the panels bevelled at the edge. The panels are sometimes left plain, sometimes carved; in others the panels are inlaid with ivory as ornament; or again the ivory, let in, is itself carved in elaborate arabesques. Even the full-sized drawings which I show of these screens give but an imperfect idea of the minuteness and delicacy of the work; and it must be borne

* I believe that, until about a hundred years ago, tiles of this description were still manufactured at Damascus.

in mind that each panel, and each straight piece of framing, is a distinct piece of wood; and that, moreover, in its original each screen contains several superficial yards of such work. This style of woodwork is now almost extinct. A few workmen, and only a few, are still to be found at Damascus, where, in the richer houses, there is yet a limited demand for it; but it is no longer in general use. The pretty and characteristic furniture, inlaid with pearl, is still found in Arab households; but all Arab art virtually belongs to the past. It is rapidly being pushed aside by the garish and tawdry products of Southern Europe.

It is not uncharitably to feel that almost every example I have quoted is a portion of a ruin, or is doomed to ruin by those sure destroyers, neglect, apathy, and selfishness. Monuments worthy of world-wide fame are dropping to pieces, either by utter disregard, or by dishonesty, or by the mildew of a fatalism which never repairs. Inquiring once of the Imam, or priest of a mosque, why, since a devout man had built so beautiful a structure to the glory of God, no good man was found to keep it in repair, I received this reply,—"Truly he was a good man who built this place for the worship of God; but it now belongs to God, and, if he wills it so, it will surely crumble and fall. It is as God pleases!"

Such is the Mohammedanism of to-day. We may well look around and ask these ruins if it was such when they were in their splendour. Did they who built them look for this? Was he, who, from the Mosque of Toodoon—just a thousand years ago—called the faithful to prayer, even such a one as the blind Mueddin, who, today, from the crumbling minaret, sends a wailing voice over the city as he cries (sadly, as it seems), "God is most great! There is no deity but God! Mohammed is God's apostle. Come to prayer—come to security! There is no deity but God alone!"

NEW POST-OFFICE FOR NEW YORK.

The new Post-office which has been commenced in New York is of large size, and has considerable pretensions. It is being erected on the triangular portion of the Park at the junction of Broadway with Park-row. It will have a frontage on Broadway and Park-row of 262½ ft., 144 ft. on the south-west front, and 279 ft. toward the Park, the plan conforming to the shape of the ground, enclosing an opening or court. There will be three stories, together with basement, sub-basement, and attic. As to the interior arrangement, the sub-basement includes the whole area of the building and that portion of the side-walks covered by Hyatt lights, and bounded by the retaining walls, and will accommodate the furnaces, necessary machinery, coal-vaults, &c. The entire basement will be used by the Post-office Department, and, like the sub-basement, includes the whole area within the retaining walls. It will be well lighted by the Hyatt light side-walk, and the illuminated floor in the principal story.

The principal story of the building will be devoted to the use of the Post-office Department. It has no interior partition walls, the official and public spaces being separated by the screen formed by the Post-office boxes, the whole of the walls above being carried on iron columns. The court-yard will be covered with a roof of iron and glass, so that the whole of the space enclosed by the outer main walls of the building will be utilised.

There are to be seven doors on Broadway, a like number on Park-row, and three on the south front, with ample corridors. Four hoistways are provided.

The floors are to be formed of rolled iron beams carrying brick arches, the haunches of which are to be filled with concrete, on which is to be laid the marble tiling, or board flooring. The roofs will be constructed of iron, covered with slating and copper.

The style of the building is to be the Renaissance, each story being carried up in a distinct order in the Doric style, increasing in richness as the top is reached. The roofs are to be carried from the main cornice, and crowned with iron railing. On the four principal angles hexagonal pavilions will be erected; these consist

of the awkwardness of the angles which the form of the net entails on the building. In the centre of the Park-row and Broadway fronts, pavilions are to be carried up, crowned with finely-proportioned square Mansard roofs.

At the south-west end, or apex, the whole frontage between the hexagonal pavilions is to be thrown forward to form a grand mass 87 ft. wide, which is to be carried up and crowned with a dome. The central pavilion is to be of similar design, and is to be connected with the corner pavilions by curtains similar to those on the Park-row and Broadway façades.

"PETRIFIED CONCRETE."

SOME works have recently been established in the neighbourhood of Victoria Park for the manufacture of artificial stone by a new process. *The Pharmaceutical Journal* says:—"It has been known for some time that Portland cement, or any concrete containing lime, can be rendered extremely hard by immersion in a solution of silicate of soda. Under these circumstances, the silica is absorbed by the lime, and the cement thereby converted into a true stone. But the cost of the silicate of soda has hitherto rendered such a process too expensive for general application. The proprietor of the works we refer to has overcome this obstacle in a most ingenious manner. Beneath the chalk beds of Surrey, in the neighbourhood of Farnham, there exists a plentiful deposit of a soft stone, containing 25 per cent. of silica, in a condition in which it is soluble in a cold solution of caustic soda. This material the inventor grinds up and diffuses through the batch of silicate of soda, containing the concrete to be petrified. The lime, removing silica from the solution, liberates caustic soda, which dissolves fresh silica from the Farnham stone. The process thus becomes a continuous one. The soda acts as a carrier of silica from the stone to the concrete. By due care, the solution of silicate of soda may be maintained of constant strength, and is therefore capable of performing an almost indefinite amount of work. The expense of the silicate of soda being once defrayed, the cost of 'petrifying' the concrete is simply the value of the cement, and the labour of the applying. No heat is required in any part of the process, and the work is therefore very simple."

THE CLARENDON PRINTING HOUSE, AND THE ASHMOLEAN MUSEUM, OXFORD.

RECENT historians of Oxford, beginning with Chalmers in 1810, assert that Sir John Vanbrugh was the architect of that noble edifice in Broad-church Lane, Oxford, long known as the Clarendon Printing House, which was built in the years 1712 and 1713. Ayliffe, a contemporary writer, in his "Antient and Present State of the University of Oxford," published in 1714, ascribes the design to "that ingenious artist of a mason, Mr. Townsend, of Oxford." Townsend, however, was only the builder; the architect was Nicholas Hawksmoor, one of Wren's pupils, who was also employed for the south quadrangle of Queen's College, and for the north quadrangle of All Souls' College. The Minute Book of the Delegates of the Press contains the following entry, under date of October 3rd, 1712:—"The Vice-Chancellor proposed to gratify Mr. Hawksmoor for his care in drawing and supervising the whole works of the new Printing House. Agreed to give him 100l." This entry deserves notice for the use of the verb *gratify* in the sense of giving a gratuity, and as showing that architects had not at that time established a claim to any stated payment as a "commission" for their services.

Another building in Broad-street, the Ashmoolean Museum, which was finished in 1683, is ascribed by the same recent historians to Sir Christopher Wren himself. Yet in the "Paræta," compiled by his son, and published in 1750 by his grandson, although one chapter of the book is given to "A Catalogue and Account of Designs of Buildings [by Wren] in the Universities of Oxford and Cambridge," no mention is made of the Ashmoolean Museum. The account books of the University contain no entry of any payment made for the building of the Museum except to a "Mr. Wood," and positive evidence that he was the architect, as well as the builder, is furnished by a view of the east end of the Museum, drawn, engraved, and sold by Mr. Bouverie, in St. Peter's Church, at Oxford, in 1685 or 1686, which has "T. Wood, archt.,"

at the foot. Thomas Wood was employed by the University as a worker in marble, and as a sculptor on two or three occasions, and might be described as "that ingenious artist of a mason," quite as justly as the Mr. Townsend who built the Printing House twenty years afterwards; but I am not able to point out any other building erected by him. A DELEGATE OF THE PRESS.

THE METROPOLITAN WATER SUPPLY.

At the last meeting of the Metropolitan Board of Works, the debate on the motion of Mr. Freeman—

"That the Chairman be requested to seek an interview with the University as a worker in marble, and as a sculptor on two or three occasions, and might be described as 'that ingenious artist of a mason,' quite as justly as the Mr. Townsend who built the Printing House twenty years afterwards; but I am not able to point out any other building erected by him. A DELEGATE OF THE PRESS.

was resumed by Mr. Richardson, who moved as an amendment,—

"That the Chairman be requested to inform her Majesty's Government that the Board, having considered the report of the Royal Commission on the water supply of the metropolis, are of opinion that there should be a constant supply of pure and wholesome water; that the existing supply is not sufficient for the metropolis, and prepared to express any opinion as to the desirability of the water supply being transferred from the metropolis to the national authority; but that, if Parliament should determine that it would be expedient that the water supply of the metropolis should be the hand of the national authority, the Board would be prepared to undertake the duty."

After some discussion, the amendment was put and negatived, only one hand being held up in its favour, and the original motion was then put, and on a division was carried by 21 to 10.

REGISTRATION OF DISEASE.

ONE of the most important objectives in the way of satisfactory sanitary legislation has always been, and still remains, the difficulty which thinkers and writers upon the subject experience in deciding what to ask for. Whether the result of the labours of the present Sanitary Commission will be conclusive to define these desiderata, remains to be seen. In the mean time, and pending the deliberations of this Commission, public opinion has, as we may be somewhat disposed upon one or two regulations as necessary to strengthen the hands and increase the usefulness of health-officers, and other authorities having more or less directly the charge of our local sanitary administration. Not the least of these is the registration of disease.

It requires but a very superficial consideration of the subject to be convinced, that however useful the registration of the causes of death may be to afford the means of judging of the past sanitary condition of a community; the registration of disease would be far more likely to afford the means of ascertaining the epidemic, as the first cases of attack would thus be made known to the authorities, probably some days before a single death would be registered. As the medical profession, the large proportion of health-officers, and a considerable number of the most able writers on sanitary matters are almost unanimously in favour of registration of disease, the subject acquires just now additional importance.

We have before us an abridgement on "National Returns of Sickneses," which coarsely, and in a practical manner, shows how such returns might be obtained, and how they would be available for the public use. This cannot fail to be useful at the present time, as the most dangerous opponents of the registration of diseases have been those who seek to surround the proposition with a host of imaginary practical difficulties.

The author of the pamphlet is careful to state in his preliminary remarks that "the proposals in this paper are entirely confined to cases of sickness occurring within the practice of Poor-law medical officers, and of the medical officers of charitable institutions." The difficulties in the way of attempting to deal with cases of sickness arising in private practice would be, certainly for the present, insurmountable; and, moreover, the origin of epidemics of zymotic diseases can almost invariably be traced to the very classes whose sickness under the present proposition would be registered.

The gist of the proposal is that Poor-law

* "Suggestions for National Returns of Sickneses," by James Lewis, of the Registrar-General's Office, Somerset House. Published by C. F. Alvey, 31, Museum-street.

* These Hyatt lights, we may usefully mention, consist of lenses fixed in a skeleton frame of iron, the whole strong enough to form a sort of window or screen. The patentees are Mr. B. F. Stevens, of Henrietta-street, Covent-garden. In many cases where light is of consequence they might be usefully introduced.

medical officers, and medical officers of charitable institutions, should furnish on a uniform system returns to a central office in London, where they would be tabulated, and presented to the public with the least possible delay.

The pamphlet gives some valuable and interesting particulars as to the extent of the information which would thus be made available. It appears that there are in England and Wales somewhat more than 3,000 Poor-law medical officers, who, according to an estimate made by Dr. Rogers, the president of the Poor-law Medical Officers' Association, treat on an average 3,500,000 cases of sickness per annum. An estimate of the number of in and out patients treated annually by the "numerous medical charities undertaking the gratuitous, or semi-gratuitous treatment of disease," adds another million and a half, making in round numbers an aggregate of about five million cases of sickness per annum as occurring in the public medical practice of England and Wales. Nearly the whole of these five million cases occur among the very class which contributes most largely to the excess of death-rates, and in which for the most part are originated all epidemics of zymotic disease. There can be no two opinions as to the value, from a sanitary point of view, of a register of the sickness occurring among so large a portion of the population of England and Wales.

It is wisely, and very strongly recommended, that the forms to be used for transmission to the central office should, in the first instance, be of a very simple character, in order that the labour both of filling them up, and preparing them for publication, should be as much as possible kept within moderate limits. This is more necessary as it appears very desirable that the medical officers should themselves fill up and transmit their returns. To ask those gentlemen to furnish a variety of particulars, many of which would probably never be fully given, which would thus render the returns incomplete, would be to defeat the object in view.

There can be little doubt that the value of such published returns of sickness as have been proposed would to a great extent depend upon the promptness with which the returns could be made available to the public. The recent deputation to the President of the Poor Law Board on the subject appears to have proposed weekly returns to the Central Office, but only an annual publication. The Medical Officer of the Privy Council is in favour of a quarterly return. We quite agree with the author of the pamphlet under notice, when he says that "if a return of new cases of sickness is to be of any use to the Central Sanitary Authority, it should be made as frequently as possible; not more seldom than once a month certainly, and preferentially once a week." We are decidedly of opinion that nothing less than a weekly return would answer the purpose in view. A less frequent return would result in this anomaly, that as regards all large town centres of population, the Registrar-General would publish the deaths arising out of the cases of sickness, of which we should not receive information until the end of the month, quarter, or year, as the case might be, and long after the returns could be of any possible sanitary use, except as a contribution to the history of disease.

A perusal of the pamphlet in question will satisfy most readers as to the thorough practicability of such a national return of sickness, and we must wait for the report of the Sanitary Commission in the expectation and hope that it will contain a strong recommendation for the publication of some such returns of sickness as are suggested in the paper before us. In the meantime we are convinced that in urging the support of all those interested in sanitary science for some well-organised system of registration of sickness, we are helping on a cause which has been so long and so often advocated in these columns.

DEATH BY SUFFOCATION, AND ITS RESPONSIBILITIES.

WITHIN the short space of four weeks no fewer than thirty-three persons have had the breath of life literally squeezed out of them, or, as the juries termed it, have died from suffocation. This is a very unpleasant subject to dwell upon, but at times it becomes our duty to ventilate these unpleasant subjects; the more so, as in this instance there is a most uncomfortable deduction to be made from those lamentable occurrences. The profession we represent is ever ready, and justly so, to take a fair amount of credit to itself

for the benefits it undoubtedly has bestowed upon mankind; and shall it not, then, take equal blame when it has left undone the good it might and ought to have done? We think it should and will; and, thinking so, we can make no apology for plainly expressing the unvarnished truth,—that the profession as regards those horrid slaughters has been, in however remote and limited a degree, tainted with the crime of manslaughter. Before, however, throwing out any suggestions for the removal of this taint, it will, perhaps, be well briefly to consider the causes of these two catastrophes, the means by which they ought to have been prevented, and the lesson they teach us with regard to our huge assembly-rooms in the metropolis. The causes are easily explained after the results; truer wisdom it is to see and avert the causes before. The meeting of two crowds of people, or the division of one (both of which occurrences take place nightly in London on a much larger scale), have, coupled with the small or unequal sizes of the passages, led to these many deaths. Engineers tell us that in conveying water through pumps and pipes the great object to be attained is sufficiency, and uniformity of size in the passage; if contraction or enlargement is made, the water becomes troublesome and unruly, and loss of power ensues. It is so with a stream of people, and we can only prevent these so-called "accidents" for the future by following out in our buildings this engineering axiom. Had this been carried out in the cases before us, how much heartrending sorrow would have been spared.

We must not lose sight of the fact that these calamities might have been far worse; if so many were killed at Bristol in trying to gain access to pleasure, how much greater the number would have been had they been seeking egress from fire and destruction.

The third point under consideration is a very serious one, and one of which it is difficult to overstate the importance.

To demonstrate our case more clearly, suppose we put it in the form of an ordinary rule-of-three sum. If in a small parochial assembly seventeen lives are lost during an unfounded panic, how many would be lost in one of our large metropolitan halls (Exeter or St. James's, for example), if a panic occurred for which there was good cause, or in case of actual fire?

We shudder at the bare idea of a correct answer to this question, and we imagine that even the most devoted worshippers of Bowannee would likewise impiously (we had almost said piously) recoil from the wholesale slaughter which would certainly take place.

Let us look at the means of egress from Exeter Hall, though we do not wish it to be insisted for a moment that we are ranking an exclusive raid upon this hall; there are many in London as bad, and some far worse. The only practical door in case of fire, &c., is that on the south side leading direct into the Strand, which would afford a means of escape to a few in the body of the building; the gallery people would have but a slender chance of flight, while the chosen 700 in the orchestra would inevitably miserably perish; and yet, when the attention of the authorities was called to this prior to the re-decorating, they refused to take any steps for the safety of the public in their charge. There are many who never enter these London halls from a dread of the certain death which would be their lot in case of panic. We have spoken of the disease almost as epidemic which pervades our halls; let us now turn to the pleasing task of suggesting the remedy. There is no Act of Parliament which obliges architects so to construct buildings, that when crowded with people in a state of panic, they can be emptied in a given time. There should be, and no building ought to be licensed until the conditions which this Act should contain were complied with. Let a committee of the leading architects and builders be formed to consider what should be embodied in such a clause, and submit the result to the Board of Trade. In this way, and this way only, we think the profession could free itself from the slight stain of which we have spoken: humanity itself demands the step, and we trust the numerous members of our profession possess those higher, purer, and more disinterested motives which will make this duty a pleasure to all. In the meantime, and till this much-to-be-desired object is attained, we should wish to impress upon our readers two saving maxims to be strictly adhered to in case of panic or fire. Never move from your seat until you have arranged and resolved on your course of action,

both with yourself and those around you; and if, being near the door, you think it well to go, do your utmost to clear a space in the street round the door. W. F. C.

A VILLA OF CONCRETE.

FERNLANDS, CHERTSEY.

THE use of Portland cement concrete as a building material goes steadily on. We illustrate in our present number a villa residence of considerable size, the walls of which are entirely constructed of it. This building, known as Fernlands, is nearly completed; it stands on a rising ground, about a mile from Chertsey, Surrey, and forms a somewhat prominent feature in the landscape from the rail, as the town is approached from the London side. The concrete of which it is built is composed of gravel and sand, dug on the spot, and Portland cement, in the proportion of 7 of gravel and sand to 1 of cement. Some portions, such as the terrace walls, are composed of 9 of gravel to 1 of cement, and this latter proportion is found to make a good wall. Hoop iron is used in the walls as a tie.

The apparatus employed in the construction is that patented and manufactured by Messrs. Drake, Brothers, & Reid, of London: it is easily adjusted to any shape or height of wall. The walls were built by the proprietor of the estate, Mr. J. Madocks, who employed his own workmen. The contractor for all other portions was Mr. B. E. Nightingale, of Lambeth.

The building consists of basement, ground-floor, and first and second stories. The large central hall, shown in the plan, is continued up to the roof, with balcony round on first floor, and is lighted by a lantern, somewhat elaborately ornamented with carving, gilding, and stained glass.

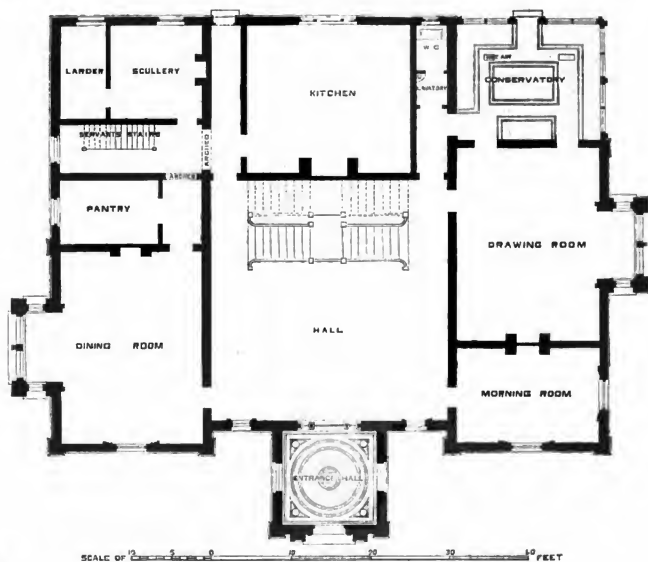
There are in all twenty-two rooms, besides conservatory, pantries, and larders. The pilasters (2 ft. on face by 8 in. projection), at each angle of the main building, and of the tower, are built up together with, and form a part of, the walls; and the walls are decreased in thickness on each floor, being 14 in., 12 in., and 10 in. The chimney-breasts, being large on the ground-floor (kitchen fireplace especially so), were reduced in size on the chamber floor, the adjustability of the apparatus allowing variations of this kind to be carried out at will. The flue-tubes to front doorway and shafts of the windows above it are of stone.

The building is heated by air, warmed by contact with earthenware, conducted mainly through flues formed in the body of the concrete walls, and admitted by sliding valvular gratings in the skirtings of the several rooms.

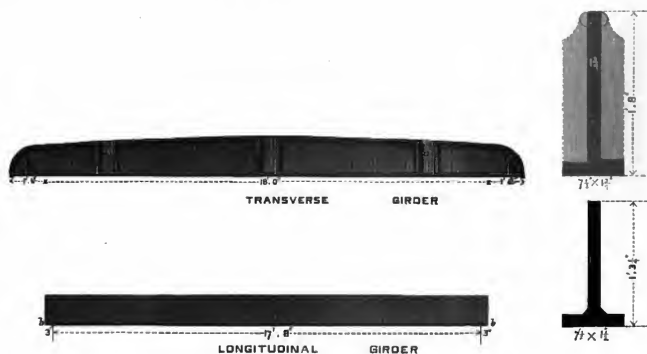
Ventilation, provided for in every room by distinct flues, formed in the concrete walls, has been constructed, and we have every reason to believe that with due care and intelligence, and with good cement, walls of any shape, height, or inclination, can be successfully carried up in this material. Bad concrete is utterly worthless; with good concrete properly applied, sound and economical buildings may be constructed.

The structure of the walls of this building was very satisfactorily demonstrated. During the construction it was determined to form a doorway in one of the inner walls. The concrete was cut away with a pickaxe to the required size, except in the middle, where a beam of concrete was left, 3 ft. 4 in. long, 9 in. deep, and 9 in. thick. This beam, a perfectly straight one, had along the middle of it one of the horizontal joints which necessarily occur between the layers of the concrete, but no bond of iron hoops. This beam was tested with a weight of 25 cwt., hung on its centre. After bearing the strain for twenty-four hours, the foreman jumped on it, but without effect, and it had after this to be demolished with a pickaxe.

The architect is Mr. T. Wootton, of Chertsey. The cost of the building, when completed, will be, we are told, about £4000, including stables and coachhouse. Mr. Patrick, of Dover-court, near Harwich, supplied the cement for the concrete walling; and Messrs. J. B. White, Brothers, of London, supplied the cement for the exterior work.



A CONCRETE RESIDENCE, CHERTSEY.
Plan of the Ground Floor.



CAST-IRON GIRDERS, KING'S COLLEGE, LONDON.



FERNLANDS VILLA, CHERTSEY.—BUILT OF CONCRETE.—MR. WORSNOTT, ARCHTCT.

CAST-IRON GIRDERS, KING'S COLLEGE, LONDON.

We mentioned in our last that some of the girders from the dining-hall, King's College, similar to those which had failed there, had been broken by the hydraulic press, in the yard of Mr. George Dines, with the view of ascertaining their strength. Reference to the account we printed at the time of the catastrophe will show that the flat was formed by three cross girders, with longitudinal girders resting on them, and on the end walls. Our illustrations represent one of each of these, A and B, elevation and section. A shows the cast pockets on the transverse girder, to which we referred at the time; into these the dovetail ends of the longitudinal girders, B, dropped, the top flange being there omitted, as shown on section. The bearing of the transverse girder was 18 ft.; the height in centre, 1 ft. 8 in.; the web was 1½ in. thick; and the bottom flange, 7½ in. by 1½ in. Pressure being applied, the girder broke through the pockets as shown, with 40½ tons pressure in centre. The girder B broke as shown, with 27½ tons in centre. The iron of these two particular girders must be considered good. Whether or not it was so in all is another question. At the time of the accident the girders were loaded with about 25 cwt. each in the centre; the girders B with 7½ tons.

BEXLEY HEATH CHURCH COMPETITION.

With reference to this unfortunate and ill-managed affair, we have received from Mr. H. E. Marsh, late chairman of the committee, a statement of the reasons which led him and five other members of it to resign on the determination being come to to adopt the design marked No. 1, by the architect who was called in to assist in making a selection. The church required is not 350 persons, and to cost £5,000, exclusive of tower; and if it be correct, as stated, that the design now determined on includes a chancel nearly sixty feet long, we can have no hesitation in applauding Mr. Marsh's opposition. It is an absurdity, or worse, and the sooner the subscribers outside interfere the better. The fact that the late chairman has subscribed 300L towards the erection of the church, and was engaged in raising that amount to 1,000L, by application to friends, seems to show real interest in the undertaking.

LECTURES FOR WORKMEN.

The lectures on "Ornamental Ironwork," to be delivered by Mr. J. M. Capes, M.A., at the South Kensington Museum, and especially addressed to workmen, promise to be well attended and to be serviceable. The first, which was given on Monday evening last, was listened to by at least 350 persons, the great bulk of whom were practical workmen.

Mr. Capes began his introductory lecture by remarking the obvious, although extraordinary, fact that, in 1870, any very pressing invitation would be required to draw together a large audience of English workmen, in order that they might be told something about that which, above all other matters, they ought to be thoroughly well acquainted with,—namely, the use of iron in every possible way of employing it. Notwithstanding the general use of iron for the purposes of modern civilisation, and for almost all the needs of life, except food and clothing, the study and practice of ornamental ironwork were in a very unsatisfactory condition. The lecturer traced the causes of a lamentable decay in what was once a great national industry, to the debasement of public taste, rather than to the absolute want of highly skilled artisans, and he dwelt forcibly on the baneful effects on art arising from the universal substitution of the low mechanical system of casting iron for the higher process of forging it. This substitution, he argued, had led to three specially injurious results. First, it had introduced unaccounted-for elements of inconsistency with the essential nature of the metal work. Secondly, it had banished the peculiar beauties in which iron stands pre-eminent over wood, stone, earthenware, and other non-metallic materials. Thirdly, it had fostered carelessness in workmanship, and reduced the workman to the level of a machine. As to the second design, he contended, was based upon the rule that beauty is to be attained by the decoration of

structural forms designed for practical use in accordance with the special qualities of the particular material employed; and all natural beauty is added by the observance of this rule. The lecture was illustrated by examples of ironwork borrowed from the collection in the Museum. In conclusion, Mr. Capes argued that the revived study of ornamental ironwork on sound principles could not but be of the highest importance to the English artist, because it is through his personal skill that a material, in itself inferior to the market price, acquires a great and permanent value; and he drew a striking contrast between the life of the true artist-workman and that of the uneducated artisan of the modern foundry.

The series will be continued weekly for five consecutive Mondays, each lecture commencing at eight o'clock; and we hope the opportunity here offered of learning something about principles, for a merely nominal fee, will be largely taken advantage of by those for whom the lectures have been expressly provided.

DERIVATION OF THE WORD "IRELAND."

CAPTAIN BURTON ("Pilgrimage to El Medinah and Meccah," 1856, Vol. iii., p. 335, n.) writes: "May not the Phœnicians have applied the word 'Irr,' which still survives in Eriu and Ireland? Even so they gave to the world the name of Britain, Bretannika, Barret, et Tanuki, the land of tin. And I should more readily believe that Erian is the land of fire, than accept its derivation from Eor (vir) a man."

Also, "U of the Chaldees (whence the Latin word), becomes in Persian 'Hir' in Arabic, 'Irr.'"

What is the passage in Claudian mentioned by "A. H." in the Builder for January 22nd?

Has the word *Irene* been traced from the fifth century onwards? How and when did the word as we now have it first appear in England? S. F. C.

NEW SCHOOL AT BIRMINGHAM WORKHOUSE.

THE erection of a new school for boys at the Birmingham Workhouse is so far completed that it will be taken possession of by a row of windows in a few days. The new building, as seen from the main road, is three stories in height. It is built of brick, and in a Gothic style, corresponding to the other portions of the workhouse. The new school and its belongings partly occupy two sides of a quadrangle, the remainder being play-ground. The cost, exclusive of land, is between 9,000L and 10,000L, and the land, we believe, was bought for something like 1,500L. The lower part of the conspicuous building seen from the road comprises the school-room and day-room, or room for the boys when not in school. The latter is lighted up by a row of windows on each side. It is 102 ft. long by 30 ft. wide, and of ample height. Over it is a dormitory, of similar dimensions and appearance, and the top story is a dormitory of the same length and width, lighted by dormer windows, and relieved by circular ribs of stained deal, which support the roof. The school-room, occupying a corner, is irregular in shape, something like the letter F, without the second stroke. In the long direction it is 50 ft. long by 30 ft., and in the other or top piece it is 19 ft. by 58 ft. Adjoining the school-room are three class-rooms. Upright under the dormitory, rooms for the schoolboys (one overlooking the lower dormitory), superintendents of labour, &c. In a room on the ground-floor, 22 ft. by 26 ft., there are rows of basons fitted, at which the boys wash after leaving their dormitories. At one end of the lavatory are baths, in which every boy receives his weekly wash. There is a swimming bath, 26 ft. by 15 ft. 9 in. The other buildings form part of the second side of the quadrangle, and consist of a dining-room, a tailors' room, and a shoemakers' room. The dining-room is 60 ft. long, 30 ft. broad, and 22 ft. high.

The trades taught in the workhouse are tailoring and shoemaking, and for the practice of each of these handicrafts there is a room 35 ft. by 23 ft., besides store-rooms and rooms for the industrial teachers overlooking the work-shops. The remainder of the quadrangle is to be used as a playground, and it is 280 ft. long by about 200 ft. wide. On the school-room side there is a covered shed, 50 ft. by 16 ft.

The architects are Messrs. Martin & Chamberlain, and the builders Messrs. Jeffries & Pritchard. The whole of the new buildings, like the

rest of the workhouse, are ventilated, and they are warmed by steam pipes. It is contemplated to appropriate the rooms about to be vacated by the boys to male epileptics.

The average number of boys in the workhouse is about 270, and the entire population of the pauper colony is considerably over 2,000.

CANTERBURY NEW WATERWORKS.

THE engine and boiler-house, coal-store, chimney, cooling pond, softening and lime water reservoirs, boundary walls, permanent pumping engines, pumps, and boilers, are all so far finished that the permanent pumping-engine, pumps, and boilers, have been in use for some weeks past to pump up the spring-water from one of the two bore-holes. The quantity of water raised from the bore-hole, by the new pumping-engine, has been at the rate of 1,000 gallons per minute, equal to about one million gallons and a half per twenty-four days.

The normal level of the water in the bore-hole is now 9 ft. above the level of the water in the river Stour, at the Silver Horse spring at Wincheap, and when yielding a supply at the rate of 1,000 gallons per minute, this level in the bore-hole is only temporarily lowered about 22 ft., the water at once rising again to the normal level directly the pumping is stopped.

The object of the present pumping is to clear out the soft chalk, &c., from the subterranean fissures that yield the spring-water, in order that the water may come up clear and free from chalk in suspension.

On Tuesday, the 18th inst., this reservoir, which is 19 ft. 6 in. deep, and capable of holding 350,000 gallons, was quite filled with water to the overflow, and, on carefully testing, it was found that the reservoir was quite watertight. The water-tightness of the 12-in. main pipe is now being tested throughout its whole length.

AN APPEAL FOR THE BUILDING TRADE.

SIR,—No one connected with building concerns but must acknowledge the justice of the touching description by your correspondent "Builder's Foreman," a Mason "in your last number, of the sufferings which the trades are now undergoing, and the privations they now endure from the collapse in building operations. Surely this subject must be taken up by the Government, for the pressing necessities of the people ought to be the first care of any statesman; and it is in their power, without any sacrifice of principle, to give work and occupation to the mechanics and business to the trades with which they have to do. The nation gave twenty millions for the manumission of the slaves without any return; they properly contributed many millions to relieve the starving Irish during the famine. I have to propose a scheme for the metropolis, by which they should have an equivalent for their outlay. There are many building operations in London which have received the sanction of the Legislature, but in which there appears to be a stand-still on the part of the Administration, who seem to think that the economy of a great nation consists in doing little or nothing,—in avoiding to spend money to meet urgent necessities. However, let me ask, when are the Law Courts to be commenced? What has justified the delay which has arisen under its sanction, for the building of the National Gallery to be begun? There has been a competition of able men, the architect has been selected and appointed, and a sum voted by Parliament upon his plans. Is this to be delayed till the 'Fies'?

There are the Public Offices to be completed. The site has been cleared, the rubbish carted away, and the foundations laid in. When is the superstructure to be carried up? For the Law Courts there is the suitors' fund in Chancery lying idle, and not a penny need come out of the Imperial exchequer. If the National Gallery were carried out, we should by donations double the number of pictures, individuals only awaiting the time when there is space to hang up their contributions to present valuable works to the nation. For want of Public Offices, a vast amount is yearly paid for accommodation in most inconvenient private premises. We are not then to have equivalents for these outlays? And in the mean time the artisans are left to starve, and the hutchers, bakers and other trades connected with them made to suffer with them.

There is also another side of the question. The mechanics must do something to induce the Government to spend their money. They must consent to lower the late extravagant wages,—to be satisfied with 6d. an hour instead of 7d.; to feel that they act nobly in accommodating their expenditure to 30s. a week instead of 36s., rather than to be paupers and idle and dependent on charity. Materials are lower already from depression of trade, and if wages be likewise diminished, the Administration may be disposed to undertake remunerative works when they can be carried out at moderate cost. The greatest economists in Parliament do not desire cessation of work; only that what is necessary should not be done extravagantly, and the ratepayer then would pay his taxes cheerfully. Oh, sir, that our Ministry would act nobly up to the occasion, and not wait to be driven thereby by a starving industrious population.

T. L. D.

DEPRESSED STATE OF THE BUILDING TRADES.

I HAVE read with attention the letter signed "Builder's Foreman & Mason." I know that what he states is true; but it raises an inquiry into a very difficult question: What is the cause of this depression, and its remedy? I venture to give my opinion on both, founded on the experience of half a century of active manhood, with a full knowledge of the particular incidents of the trade, and of one of which he belongs. The active prosperity of the "Building Trade," for some years causing a very considerable rise in "building labour" generally, was, like the prosperity which brought on the climax, on "black Friday in 1866," artificially brought about by a reckless employment of a super-abundant supply of actual and spurious labour, the result was collapse, reducing the price of every description of material, building materials especially, except "labour." Those who take on themselves to organise the labour market say that they can by combination protect labour from the adverse influence of this general fall in price; but every present experience misleads and they cannot accomplish this. If labour were now "permitted" to take the best price it could get, employment would be largely increased, and the time would come when, from the increased demand for labour, the price would rise. Would your correspondent, who probably, as a good hand, has been receiving 7d. per hour for eight or ten hours a day, consent to work for 6d. per hour, or less, if he could not get that? Would many others do the same? If so, the low price of materials and the low price of labour would tempt capital back to the building trades; and, after experiencing the disagreeable, though wholesome truth, for a short time that "half a loaf is better than no bread," the whole loaf would return. This is what every other active industry is obliged to do, and, notwithstanding all the emigration schemes of sending out the brave and energetic, and keeping the pauper at home, what the "labour power" must come to,—viz., submit to the practical effects of causes which it cannot control. SENEK.

THE QUADRANGLE OF THE ROYAL EXCHANGE.

SIR,—The propriety of the observations made by your correspondent, "A. P.," in your number of the 6th inst., with reference to the covering over the central court of the Royal Exchange with a glass roof, cannot be denied. The effect which would be produced by such a covering, would not, in my opinion, in any way destroy the beauty of the building. The amount of accommodation provided by it is wet and muggy weather to our great merchants and City traders would unquestionably be a wonderful gain; and the convenience of such a covering to the public in general could not fail to be valued and appreciated as it would deserve.

The advertising mania alluded to by your correspondent cannot be too much deprecated. Advertisements, advertisements, and advertisements, are the order of the day; and that a public building like a Royal Exchange should be allowed to be "distorted and vulgarised, as it is, with boards of a thousand colours," appears to me certainly most disgraceful to those who are in authority, and able to put it down; especially when there are great capabilities at hand by means of a little money to decorate and give the proper character to the interior of the

building, which at present it stands so much in need of.

I am not a moneyed man, not even a small merchant, nor a City trader, but will gladly contribute my mite towards such a desirable work as that of covering over the central court of our "Royal Exchange" (though I may very seldom or never make use of it), if it be only for the sake of protecting her Majesty.

J. H. G.

COAL-CELLAR PLATES.

A FEW days since I observed an architrave trailing a piece of leather on the iron plate over a coal-cellar; by pulling a string attached to his sucker he lifted the unsecured plate. I pressed my walking-stick on the edge of another plate, and it instantly turned over like a thing of life. I replaced it, and passed on my way wondering that these are not looked after; it is temptation to entry, and dangerous to pedestrians; many are worn smooth, and when covered with snow, are very slippery indeed. District inspectors might inspect them. If one of them performed the letter V on the pave, or dropped through on to the coals, it would probably lead to a public duty being performed promptly and energetically. The Board of Works ought to supply them with suckers; the police might be furnished with the same: they would then have the pull against many negligent householders, and call them over the coals for not looking after their plate.

R. T.

THE HEARTH IN OUR HOME.

A CORRESPONDENT writes:—

"Allow me a few words on the construction of the fire-hearth in the speculative-fidels, or rather in the hundreds of small houses that have sprung up around the metropolis. I have made a point to notice this important fact, that the trimmer of flat brick, or no trimmer at all, is the rule, and the brick-on-edge trimmer is the exception; then comes plastering with layer of mortar; and then, to fill up, gravel and thinned mortar; finished with 1-inch of Portland cement. With the plastered ceiling all looks secure.

I have heard of two serious accidents from the failure of such hearths in the last few months. In the one case, at Peckham, a little child was nearly killed underneath, and a young woman nearly came through with the falling debris. In the other case, at Bow, an old gentleman, sitting by the fire, was severely lacerated. In both cases the affair seems to have been hushed up, or quietly settled.

It is almost time the public were protected from this penurious atrocity. I leave the case in your hands, to treat it as you may think fit in your journal."

The warning comes not a day too soon. The Building Act says—"The hearth for aib of every chimney shall be bedded solidly on brick, stone, or other incombustible substance, and shall be solid for a thickness of seven inches at the least beneath the upper surface of each hearth." In some cases the joists are of such insufficient depth that carrying out the requirement of the Act would bring the underside of the hearth below the ceiling; and district surveyors are sometimes wisely led, out of mercy to the builders, to allow the insufficiently-formed trimmer to pass. More often, however, they are imposed on by false statements. A builder who has put in a hearth not in accordance with the instructions of the Building Act would find himself in an awkward position should a fatal accident occur in consequence.

SEMPRINGHAM ABBEY CHURCH.

THIS interesting old church has been restored from its sadly dilapidated state, and re-opened for divine service. The old roof is replaced by a new one of uniform height, with bays carved in accordance with the existing original, and have been substituted for the heterogeneous and unsightly pews. Tiles laid in patterns now occupy the places of the broken slabs and stable pitching. The north wall has been rebuilt from its foundations, and extended so as to occupy a new one of the old north transept. The walls and piers and arches have been denuded of their various coloured washes, and the mural decorations have once more been brought to light. Three out of the four tower arches are now opened, and that on the south has had a window inserted, which has been filled with stained glass, containing the sacred monogram

and medallions with Alpha and Omega, the gift of Mrs. Sanders, the wife of the vicar. There is another window of stained glass on the south side of the nave, the gift of the Rev. J. C. K. Saunders and Mrs. Saunders, in memory of two daughters. The subject is Our Lord's Ascension, executed by Mr. W. H. Constable, of Cambridge. A third window represents the Saviour inviting the weary and the heavy laden to come to Him. The chancel has been re-built by the Crown (her Majesty being the proprietor and owner of half the parish), at the cost of 4000. It is in the Early English style, with an apse termination, having three lancet windows at the east end, between which are pillars of red Mansfield stone, resting on carved corbels, and enrounted with sculptured capitals. The floor is laid with Minton's tiles. The pulpit is of carved oak, on a stone base.

OXFORD.

Proposed Enlargement of the City Court.—At a recent meeting of the town council, the City Buildings Committee reported that the following buildings have been invited to tender for the enlargement of the City Court, named, Geo. Wyatt, Chas. Selby, Messrs. Honour & Castle, T. Jones, George Jones, James Baker, Henry Cowley, and J. R. Symm. When the tenders (five in number) were opened, Messrs. Honour & Castle's, amounting to the sum of 2921, being the lowest, was recommended to be accepted, and the town clerk to be instructed to draw up a contract and submit it for the approval of the committee. The mayor, in reply to a question, said five tenders were sent in as follows:—Mr. G. Jones, 3521; Messrs. Honour & Castle, 2921; Mr. T. Jones, 3118; Mr. G. Selby, 3581; Mr. T. Jones, 3251. Mr. Wyatt and Mr. Symm declined to tender. After a good deal of discussion the recommendation of the committee was finally adopted.

The City Gaol.—The City Gaol Committee recommended that Mr. John Castle complete the specifications in detail; also that he prepare the bills of quantities preparatory to obtaining tenders from builders, and that the estimate be divided in the following manner, namely,—1. A separate one for the new wing; 2. A sum for the alteration of the old building; and 3. An estimate from Messrs. Hutton & Co. for the whole of the heating and ventilation. Mr. Galpin said there was a serious objection to one part of the report—that which recommended that the city surveyor should prepare quantities. There would be much dissatisfaction among the profession if such a course were adopted. Another reason for not adopting it was, that the estimate was, that if any errors occurred in estimates of this description, prepared by the city surveyor, the authorities would be responsible. He agreed to the report with this exception, and he moved that the clause be expunged, and that the report be then approved. Mr. Bruton said he was bound, as an architect, to support Mr. Galpin's motion. There was no doubt he had stated what was the actual practice amongst the profession—that it was not politic for an architect or surveyor to take out quantities, or to be responsible for that part of the work. If that were done, the result would be, either that the builders would do as much work as was required, and ignore the specifications, or do the work in the specifications and not in the quantities, and that the city would be responsible for the difference. Mr. Tollis was ultimately appointed; and the report was approved, with this exception.

The Sewage and Drainage.—The town clerk has issued a pamphlet bearing on these important questions. It is entitled "A Letter from the Town Clerk to the Mayor of Oxford on the Drainage Question and the Bill promoted by the Thames Conservancy." In his introductory observations he explains that he has received from the Thames Conservancy the duplicate of a letter addressed to the Board, repeating the previous injunction of the former body as to the discontinuance of the passage of sewage into the river, and stating that "The Conservators have insisted that steps should now be taken to insure the purity of the water of the Thames." The town clerk next sets forth the gist of the statutes prohibiting the pollution of that stream and its tributaries, and then goes at once into the subject of the sewage and drainage. In the outset he says,—

"If we are forced to some extent, the general opinion seems to be that we must consider the present sewer,

thus caring for our purity of air, fire, and water; then, my, I repeat, cannot such a scheme as I mention be promoted to prevent us being slowly poisoned by 90 per cent. of our articles of consumption? I am fully persuaded, if the legislature adopted such a plan we should hear of no more "bores" or "bottles" in our houses, more chemically rendered usable in soapage, no more mahogany sawdust in coffee, no more of the thousand things we unconsciously consume daily, to our physical derangement, and at the expense, perhaps, of our mental capacity.

W. L. G.

ARBITRATION AS TO GROUND AT CROYDON.

MR. URBAN-SMITH ASHBY has held a court at the Greyhound Hotel, Croydon, before a special jury, to assess the amount of compensation to be paid by the London, Brighton, and South Coast Railway Company for lands required to be taken from the trustees of Sir John's estate, for the construction of the Surrey and Sussex Junction Line. Mr. Lloyd, for the claimants, having given a history of the Surrey and Surrey Junction Railway (now proposed to be abandoned), called Mr. Robert William Fuller, who deposed that he was an auctioneer and valuer, having considerable experience with regard to the value of property in and about Croydon. The quantity of land altogether taken by the company was 3a. 0r. 51p.; of this 3a. 2r. 15p. was building land, which was estimated to be worth £604, per acre, detached residences, with garden and grounds (3r. 16p.), together with the reversion of 75d. per annum on the expiration of a lease in 1875, he had estimated to be worth, together, 1,362l. 10s. 6d.; add 10 per cent. for compulsory sale, 201l. 10s. 6d.; and 500l. for consequential damage and depreciation in value. The figures of the works to be done, as follows:—Freehold land, at 650d. per acre £1,650 0 0 Detached residence, with garden, at 550d. per annum to end of lease, with subsequent reversion of 75d. per annum, including 5 per cent. interest 1,368 0 0

Add 10 per cent. for compulsory sale £2,014 0 0
Consequential damage 500 0 0

£3,708 13 0

Mr. W. J. Blake, an auctioneer and valuer of thirty-three years' standing in Croydon, gave evidence as to the value of the property in the neighbourhood of Croydon, and had made thereupon of the value of the plot in question, the total of which amounted to 3,708l. For the railway company, Mr. H. Jones, M.P. for Croydon, and Mr. E. J. Vigney, surveyors, estimated the value of the land at 2,453l. The jury awarded 3,100l. to the claimants.

COMPETITIONS.

Alexandria Fountain Competition, Glasgow.—In this competition, which is for a *fontaine* to be erected in honour of Mr. Alexander Smollett, of Bonhill, a design by Messrs. Adamson & McLeod, architects, under motto "Seven," has been selected by the committee from thirty-six sent in. The erection of the fountain is to be proceeded with at once. The style is French Gothic, to be carried out in durable freestone and red and gray granite.

Kemington Workhouse.—The Board of Guardians met on Wednesday, the 9th inst., when they selected the design submitted in competition by Mr. Williams.

CHURCH ARCHITECTURE OF THE NINETEENTH CENTURY.

Sir,—No century since the Reformation has seen so many churches built as the present, but as we are living in practical, businesslike, and, we may hope, useful times, we should not the plan of our new churches be in accordance with our present form of worship, instead of being built after the pre-Reformation type of parish church? We meet for worship as one congregation, but generally under four separate roofs, viz., nave, two transepts, and chancel; sometimes, perhaps, only one aisle, and in very small churches with perhaps only nave and chancel; but what would be thought of our architects if they were to build any other kind of building that was intended for one assembly, "say a municipal hall" with even one row of pillars down the length of it? I do not, perhaps, my argument may not be met by the difficulty of the wide span of roof in Gothic architecture, but this is not an insuperable difficulty. Take Westminster Hall and King's College Chapel for instance; besides, the later Gothic has wider and less pointed roofs than the Early Gothic, which our architects are so fond of copying. Moreover, Gothic is not absolutely necessary at all, though usual, and perhaps desirable.

Since our railway stations have become common, we have many specimens of wide-spanning wooden and iron roofs of light and somewhat elegant appearance; and looking at it as a matter of expense, though the roof would probably be more, the stone or brick work and foundations would probably be less. Now, perhaps, some of our Churchmen may think it unorthodox not to have a chancel, but this may be obviated by

having it all chancel, having the seats each side, and facing one another, like our cathedrals and college chapels, or there might be some artificial division if desirable; but if we must have a chancel under a separate roof, let it be of the same width as the church, so that the whole congregation may see and hear the clergyman when at the communion-table; for under the present system those in the aisles, "which form nearly half the entire congregation," have often some difficulty in doing this. As a matter of usefulness, we might take example from Dissenting churches, and have inconspicuous some of their Gothic-Grecian fronts may appear.

I am aware that some of our modern churches have aisles to the chancel, and perhaps some may consider these our models; but this is only dividing them into six compartments instead of four and increasing the number of pillars, and still a great number in the aisles are unable to see the clergyman at the communion-table or pulpit, or when he is in any other position.

J. H. G.

CHURCH-BUILDING NEWS.

Carlisle.—The new parish church of St. Mary White has been opened. The site is in the Abbey near the cathedral. The new edifice has been built of red freestone in the Gothic style of architecture, the great object of the designer having evidently been to make it as simple as possible, but at the same time to make it harmonise with the cathedral. The interior differs from that of the other churches which have recently been built in Carlisle, inasmuch as it has no chancel arch to divide the chancel from the nave. The entire length of the church from the west end to the chancel step is 69 ft., and thence to the extremity of the apse it is 36 ft. more. The width of the nave between the piers is 33 ft., and that is also the height of the side walls, while the height to the ridge is 64 ft. There are two aisles, each 12 ft. wide, divided from the nave by three arches on each side, torched with red and white stone alternately, and resting upon pillars of Kilkenny marble. The clerestory is lighted with sixteen lights, each about 7 ft. in height, arranged in millions within down in doublets, relieved by shafts of Irish green marble supporting the arches. At the west end there is a four-light window, 13 ft. wide by 24 ft. high, filled with tracery in geometric Gothic design. There is a small tracery window at each end of the aisle, and the aisles are further lighted by small plain windows. The apse is semicircular in form, and in it are seven windows with tracery heads, the finishing of the interior being shafts of Irish green marble. The chancel is done with Milton's encaustic tiles, chocolate and red tiles being placed alternately, and relieved by bands of green glazed tiles. The chief feature of the east end, however,—which, by the way, is, strictly speaking, the south-east, as the church, like the cathedral, does not stand directly east or west,—is the stained glass presented by Mr. Loeb. The central lancet window contains the Ascension, and each of the six other lights contains two subjects, those on the left of the centre representing incidents from the Old Testament, chiefly illustrative of the life of Moses; while those on the right have for their subjects incidents in the life of Christ. The roof of the apse is hipped and ornamented with monograms and floral decorations. A noteworthy feature of the interior is its inner roof. Several feet underneath the timbers of the roof an inner ceiling of elliptic shape has been constructed, supported by Gothic ribs, and this is said to improve the acoustics of the church. The whole of the wood fittings are of *Memel* varnished. They are designed after the style of those in the Temple Church in London. Seatings are provided altogether for 593 persons. The chancel has encaustic tiles on the floor. Behind the pulpit, and adjoining the vestry, the organ, built by Messrs. Gray & Davidson, has been placed, at the cost of 500l. each; whilst in the opposite corner, seats are placed for the accommodation of Sunday-school children. The church is heated by Hayden's patent hot-air apparatus. There are ninety-four gas jets placed round the top of the reredos, and a row of twenty-four jets round the capital of each of the pillars of the nave for a total cost will be about 6,000l. The contractor for the whole work, at 4,828l., was Mr. George Black, of Carlisle, joiner, who sublet the stonework to Messrs. C. & J. Armstrong, builders; the plumber was Mr. Richard Johnston, of Carlisle; the slater, Mr. Norman;

Messrs. Slee & Morgan were the glaziers for the contract work; and Mr. Thomas Corbett supplied the Angleses and Irish green marble columns. Mr. Christian was the architect.

Books Received.

The Second Course of Orthographic Projection: being a Continuation of the New Method of Teaching the Science of Mechanical and Engineering Drawing; with some Practical Remarks on the Teeth of Wheels, the Projection of Shadows, Principles of Shading, and Drawing from Machinery. With numerous Illustrations. By WILLIAM BIRKS, Assoc. Inst. C.E. London: E. & F. N. Spon, Charing-cross, 1869.

AFTER an interval of some years, Mr. Birks has supplemented his *Elementary Treatise on Orthographic Projection* with a second volume, in which he has compressed the bulk of the lectures delivered by him at the late College for Civil Engineers, Putney, and at the Department of Science and Art, Kensington. In this second course of Orthographic Projection, he has pronounced the importance of establishing a uniform system for the formation of the teeth of wheels, and having compared various methods now in use, and slightly altered that which is considered the best among them, he hopes his improvement will be recognised and universally adopted, so that for the future there may be but one form. As matters now stand in this department of mechanical science, the teeth of wheels of any given pitch obtained from different makers will not work together, because every maker has a formula of his own for the shape of the teeth, which he believes to be the best, but which, as we have remarked, prevents his wheels from working with those obtained from any other firm. After describing the methods pursued by various engineers, including that obtained by the use of the odontograph, he lays down a plan, by the adoption of which the inconveniences attending the present diversity of rules might be done away with. He proposes,—

- "1. That there shall be a generating circle for every pitch, that pitch being stamped or otherwise marked on each scriber, or generating circle.
- "2. That the diameter of each generating circle be equal to the radius of the pitch circle, and the teeth be set.
- "3. That the number of teeth assigned to the least wheel be fourteen for all sets of wheels for mill gearing."

The proposal of a universal cycloidal system has been made before now, but from the fact of a want of sufficiently definite terms it fell to the ground. The diameter of the scriber, for instance, was left to the judgment of each maker. Mr. Birks's more precisely stated proposal is likely to be useful. French and American engineering has been in *under* trouble by the author, and he incidentally mentions facts that may be serviceable. In describing bearings for shafts, we may note, he says, an alloy of copper and tin is the composition most in use, though compounds of tin and zinc, with a little copper, have been employed, as well as pure tin; but this last has the disadvantage of distorting under pressure, unless confined by a flange or ledge of harder metal, in a manner patented in 1843, from an American plan, communicated by Mr. Babbitt, of New York. Again, he records that Mr. Penn has employed lignum-vite for the bearings of screw propellers, with a plentiful lubrication of oil. He also mentions the use of resins; and similar scraps of information are frequently dropped by the way. The chief contents of this second course, however, consist of instruction in such matters as toothed wheels and their pitch, spur wheels and their delineation, mortise and tenon wheels, the cycloid, epicycloid, hypocycloid, and involute; gears, bevel, skew, and other gearing; eccentric wheel shafts, crans, heart-wheels, wipers, tappets, and ratchet-wheels; couplings, plummer-blocks, pulleys; and similar details, without a knowledge of which all the art of the engineer could be as useful. When they are fully explained and described, the projections of shadows are treated at length and with luminosity; and then the work concludes with two chapters, with which it might as well have been commenced; the first being on shading and colours, and the second containing directions how to draw from nature, and copy drawings. As to those in want of plain instructions on orthographic projection, we commend the work, generally. The author, we perceive, particularly recommends to pattern-makers the section of it we first mentioned.

First Teachings about the Earth; its Lands and Waters; its Countries and States; a Beginning for Children. By M. Oetz. London: Simpkin, Marshall, & Co. Dorking: Clark.

The useful lady who is the author of this volume says, with much truth, in her brief preface:—

"The child to whom that weary collection of names and sounds in ordinary political geography is distasteful and meaningless, becomes at once interested and pleased when taught about the earth as a whole; as a planet spinning on its axis, with its bulging tide-moves, its fire-spitting craters, its blue atmosphere, its cloud vapours, its mountain chains, and its coral islands."

Then it is that the child becomes interested in the earth and its people, its nations, its capitals, and towns, and its political histories; and so prepared for that dry political geography with which children are usually forced to begin, whether they like it or are interested in it or not.

It is well such a volume as this should not only be simple and clear, and it is so; but there should be no obscurity such as this, for example:—"Tully trees—trees which produce the red dye, cochineal." As most people know, and it is no insect, and not an excretion, or an extract, from a tree, as this quotation might lead children to suppose.

In general, however, the matter is both accurate and simple. It is divided into lessons, and to each lesson is appended a list of questions, with the answers briefly stated.

VARIORUM.

MR. TIMBS'S Year Book of Facts in Science and Art, which we always look through with special interest, has been issued for the past year. The portrait on this occasion is one of Mr. Rosd, C.B., the chief constructor of the navy, and, as usual, there is a memorial along with the portrait. The volume contains the usual amount of varied information as a yearly record of progress in discovery and of improvements in science and art.

Miscellaneous.

Complaints of Scarcity of Employment come from the Northern United States, where there is "a glut in the labour market." It is said there are at least 50,000 workmen in New York out of employment; and the *Chicago Tribune* calculates that there are at any rate from 15,000 to 20,000 in the same condition in that great hive of the West. The same thing is said to be true of all the towns and many of the rural districts all along the Northern States. A correspondent of the *New York Tribune* represents that there are in the rural districts of New York State alone at least 100,000 persons unemployed. That journal advises that they should go to the far West; but the *Chicago Tribune* points to the South as the great outlet for surplus labour. The *Toronto Globe*, recommending the North, says that the present condition of the farming population, even of the Western (United) States, is far from being what could be desired, but that there never was in Ontario a better prospect of ample employment than in the coming spring and summer, though the supply of work is comparatively limited at the present time; and the *Star*, speaking of the work-women, give painful instances of the hardships caused by scarcity of employment, or inadequate wages, amongst women.

The Cost of the Leavened and Catechism Asylums.—At a recent meeting of the Metropolitan Asylums Board, a letter was read from the Poor Law Board, which, referring to a previous letter of the managers, said the Board could not "share the satisfaction" of the managers with regard to the near completion of the Leavened and Catechism Asylums, inasmuch as the original estimates had been exceeded by nearly 6 per cent. A resolution was passed reminding the Poor Law Board that the original estimates were only approximate, and that there was cause for satisfaction to the managers when they found that their rough estimate of 257,000, for the two asylums, and all connected with them, would only be exceeded by 16,000, the actual cost being 272,000; and they held that there were very few, if any, instances of buildings of a similar magnitude being completed for a sum so closely approaching the original estimates.

The Horney Drainage.—At a special meeting convened to consider the scheme submitted for draining the Horney and Crouch End district, Col. Jencks, the chairman, stated that three engineers of eminence had been consulted, each of whom was capable of carrying out the plan he submitted. The plans were almost identical, the difference being, that Mr. Labham would allow storm-water to flow with the sewage, whilst the others would provide a separate set of drains. He thought they should judge each plan irrespective of land for irrigation, as it was possible that some chemical process might be devised for the purification of the sewage, whereby they would be relieved from the expense of purchasing land. Mr. Latham's estimate was 28,350*l.*, irrespective of compensation; Mr. Meeson's, 43,427*l.*; and Mr. Shield's, including compensation (47,000*l.*), 44,268*l.* Their surveyor had taken out the quantities, and calculated Mr. Latham's at 47,041*l.*; Mr. Meeson's, at 46,056*l.*; and Mr. Shield's, at 53,381*l.* In Mr. Latham's plan it was proposed to drain Stroud Green by a sewer, 42 ft. deep, for two miles; and in Mr. Meeson's there was to be an embankment to carry the sewer through the Campobourne estate. A discussion ensued, and it was finally agreed, that from the knowledge their surveyor had of the district, he should draw up a report for the guidance of the Board.

The British Archaeological Society of Rome.—This society has begun the season with vigour. The weekly meetings are well attended. Last week the excursion was to the tombs on the Latin Way and the remains of the Church of St. Stephen. The frescoes and stucco ornaments of the first century in the tombs were much admired, and the remains of the early church were considered interesting; but great surprise was expressed that a society of gentlemen or ladies should be obliged to creep through a hole to see them, merely because the authorities have walled up the doorway in the modern walls built by the Pope to preserve the ruins. On the 22nd of January, the excursion was to the Thermo of Caracalla, where Mr. Wood, the secretary, repeated on the spot Visconti's lecture, which he had read the night before at the meeting. The society then went to see the subterranean chambers, to which the entrance is from an adjoining vineyard behind the Thermo—the proprietor of which was very obliging, and ready to show anything. There is no plan to be had of these interesting sub-structures. One corridor runs the whole length of the Thermo, and is probably 10 or 12 yards high, but it is so much filled up with earth that the bottom has not yet been reached.

Improved Industrial Dwellings Company.—A meeting of the shareholders of this company was held at the Mansion House on Monday. The report, which recommended a dividend at the rate of 5 per cent., leaving 2,284*l.* to be carried forward, was taken as read. The chairman, Sir S. Waterlow, in moving that it be received and adopted, said that the amount received from the tenants in the shape of rent was very satisfactory, considering the great depression of trade. He had no doubts still more satisfactory results would be shown if trade revived. The shareholders had not gone into the matter with the view of making large profits; their object, rather, was to ascertain whether the dwellings of the working-classes in the metropolis could be reconstructed on a plan which would yield a fair and reasonable return on the capital invested. The working of this company showed that that could be done, and Mr. Allan, who had erected most of their dwellings, was so satisfied of their progress that he had undertaken a similar work on his own account as a building speculation. He had already erected one block of buildings, and had commenced the erection of other four blocks. The report was unanimously adopted.

The Brighton Sanitary Association.—The annual meeting of this Association has been held in the Committee-room at the Royal Pavilion. The committee's tenth annual report stated that much useful work had been effected during the year. The agents of the society had diligently exerted themselves in the discharge of their respective duties; and it was evident that, through their influence, a great improvement was manifested in the general cleanliness of the houses, as well as in the occupiers of them, in the districts which have come under their inspection.

The South Staffordshire Industrial and Fine Arts Exhibition.—At the concluding meeting of the committee who successfully carried out this exhibition held in Wolverhampton last summer, the statement of accounts was presented, the surplus appropriated, and the committee dissolved upon the termination of their labours. The net profit is 875*l.* The exhibition was visited by nearly a quarter of a million of people, and of these at least 75,000 were working men. A scheme was laid before the meeting for spending the balance, and securing 1,000*l.* of Government money to establish a central art and science school for Wolverhampton and the district. The exhibition was projected for the equal benefit of the Wolverhampton School of Art and the South Staffordshire Educational Association; and at the meeting Mr. Robert Kettle explained the outline of a plan in which the two institutions propose to co-operate for the accomplishment of this object. It is essential for the success of the proposal that about 700*l.* should be subscribed by the public, and an appeal is to be made, under the sanction of the Exhibition Committee, to the guarantors of the exhibition, and the manufacturers, merchants, and others, for this sum, which is considered sufficient to found a self-supporting school to diffuse a knowledge of art and of science in two important branches, in this populous locality.

Lecture on Pottenham.—The Rev. Charles Kerry, curate of the parish, has read an interesting paper, in the school-room, on "The History and Antiquities of Pottenham." The rector, the Rev. W. A. Dockworth, took the chair. The room was densely crowded, and the audience were much interested and gratified with the lecture, which was illustrated throughout with homely stories of the events and doings of the old folks of Pottenham. The lecturer exhibited the British and Roman relics discovered in the parish within the last few months, whilst other interesting objects less portable were illustrated by large ink drawings, which added to the general interest. The address contained much of value and importance in connection with rural archaeology. The lecturer thus spoke of the name Pottenham. The word is Anglo-Saxon, and signifies the "Home of Pita." "Patten" or "pitten," is descriptive of the home, and refers to some kind of home which appeared at least remarkable to the Saxons. It is well known, that the Britons usually roofed pits in the grounds for their habitations, scooping them with a conical erection of branches or reeds.

Reduced Postage for Printed Matter.—Printed matter abroad is carried at much lower rates than in this country, to the great benefit of the community. Circulars, newspapers, and books, and even small parcels, are transmitted by the post in foreign countries at rates which should put Englishmen to shame. The Government, last Session, expressed itself favourably to a reduction of the rates, and the Post-office officials, it is well known, are quite ready to undertake the service. In the multitude of other pressing duties it may be overlooked, and the council of the Society of Arts of London have therefore appointed a committee to take steps for urging upon the Cabinet the great importance to all classes of reducing the postage on printed matter to one halfpenny instead of a penny, as at present, for every four ounces weight. All classes should give their support and influence on behalf of this committee.

Music.—On Wednesday, at the hospitable residence of Mr. Henry Hill, F.S.A., a concert, called "The Silver Wedding," was given, and the music composed by Mr. William Lawler. Was performed for the first time by a number of zealous and well-trained amateurs. It is a bright and sparkling work, and should obtain for the composer more attention from the music publishers than he, although by no means unknown, has yet received. The opening chorus, "Hail, happy day, with three-fold blessing crowned," the ballad, "The Sun in his glory and splendour," and the part-song, "My Mayday sainte your path attend," especially pleased the audience. The last-named is worth the attention of Mr. Henry Leslie for his choir. Pope, Goldsmith, Mathew Bishop, and others, supply charming words.

Buckingham Palace.—A number of workmen are engaged at Buckingham Palace in painting and decorating the interior. The decorations and improvements will cost about 6,000*l.*

TO BRICKMAKERS, CONTRACTORS, &c.
WANTED, by a practical and trustworthy MAN, a SITUATION as MANAGER or FOREMAN of a BRICKFIELD, or by contract as a Laid. Thoroughly experienced bricklayer in all his branches. Can be well recommended by several and former employers. Address, 346, Office of "The Builder."

TO BUILDERS, &c.
WANTED, a RE-ENGAGEMENT, as SHOP or GENERAL FOREMAN, for the construction of masonry and a good draughtsman. Country preferred. Address, W. H. 22, High street, Chelsea, S.W.

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WANTED, by a respectable Married Man, EMPLOYMENT as CIRCULAR SAWER. No objection to the country. Good references. Address, G. H. 2, W. 1, High street, Chelsea, S.W.

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WANTED, a SITUATION as FOREMAN of PAINTERS, by a thoroughly practical man. Is a fair painter. Good references. Country not objected to. Address, F. C. 20, Old Vine street, London, E.C.

TO BUILDERS, &c.
WANTED, by a JOINER, a JOB by the PIECE. Will agree to take per cent. off the hand sold to first-class work, should be made and wanted. Good references. Address, 30, Office of "The Builder."

TO BUILDERS, PLUMBERS, &c.
WANTED, a SITUATION as GENERAL WORKING FOREMAN, or otherwise, by a first-class PLUMBER to all its branches. Labour, stone, putty, and painting, for a particular or general. Address, E. H. 2, W. 1, High street, Chelsea, S.W.

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WANTED, a SITUATION, as JUNIOR ASSISTANT. First year's experience. Good references. Address, E. H. 2, W. 1, High street, Chelsea, S.W.

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WANTED, a RE-ENGAGEMENT, temporary or otherwise. Is a really good draughtsman and estimator. Has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.
WANTED, a SITUATION as GENERAL ASSISTANT, in either of the above offices, by a man who has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

WANTED, by a Young Man, a SITUATION as JOB. Has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

WANTED, EMPLOYMENT, by a respectable Young Man, age 24, as PLUMBER, PAINTER, GLAZIER, and PLAIN LIME WORKER. Has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

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WANTED, by the Advertiser, aged 34, a SITUATION as GENERAL ASSISTANT, in either of the above offices, by a man who has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

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WANTED, a RE-ENGAGEMENT, as GENERAL ASSISTANT, in either of the above offices, by a man who has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

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WANTED, by the Advertiser, a Builder's as GENERAL ASSISTANT, in either of the above offices, by a man who has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

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WANTED, a RE-ENGAGEMENT, as SHOP FOREMAN or Charge of a Job, by a thoroughly practical man. Has been employed in the construction of houses, and the general work of building. Is a good hand. Can take charge of a shop or job at any time. Address, 30, St. John's Street, W. 1, St. Martin's, Clerkenwell, London.

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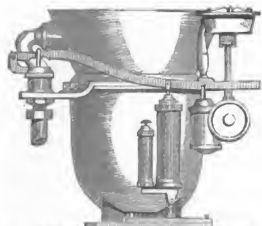
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1194-inch. 1196-inch. 1198-inch. 1200-inch. 1202-inch. 1204-inch. 1206-inch. 1208-inch. 1210-inch. 1212-inch. 1214-inch. 1216-inch. 1218-inch. 1220-inch. 1222-inch. 1224-inch. 1226-inch. 1228-inch. 1230-inch. 1232-inch. 1234-inch. 1236-inch. 1238-inch. 1240-inch. 1242-inch. 1244-inch. 1246-inch. 1248-inch. 1250-inch. 1252-inch. 1254-inch. 1256-inch. 1258-inch. 1260-inch. 1262-inch. 1264-inch. 1266-inch. 1268-inch. 1270-inch. 1272-inch. 1274-inch. 1276-inch. 1278-inch. 1280-inch. 1282-inch. 1284-inch. 1286-inch. 1288-inch. 1290-inch. 1292-inch. 1294-inch. 1296-inch. 1298-inch. 1300-inch. 1302-inch. 1304-inch. 1306-inch. 1308-inch. 1310-inch. 1312-inch. 1314-inch. 1316-inch. 1318-inch. 1320-inch. 1322-inch. 1324-inch. 1326-inch. 1328-inch. 1330-inch. 1332-inch. 1334-inch. 1336-inch. 1338-inch. 1340-inch. 1342-inch. 1344-inch. 1346-inch. 1348-inch. 1350-inch. 1352-inch. 1354-inch. 1356-inch. 1358-inch. 1360-inch. 1362-inch. 1364-inch. 1366-inch. 1368-inch. 1370-inch. 1372-inch. 1374-inch. 1376-inch. 1378-inch. 1380-inch. 1382-inch. 1384-inch. 1386-inch. 1388-inch. 1390-inch. 1392-inch. 1394-inch. 1396-inch. 1398-inch. 1400-inch. 1402-inch. 1404-inch. 1406-inch. 1408-inch. 1410-inch. 1412-inch. 1414-inch. 1416-inch. 1418-inch. 1420-inch. 1422-inch. 1424-inch. 1426-inch. 1428-inch. 1430-inch. 1432-inch. 1434-inch. 1436-inch. 1438-inch. 1440-inch. 1442-inch. 1444-inch. 1446-inch. 1448-inch. 1450-inch. 1452-inch. 1454-inch. 1456-inch. 1458-inch. 1460-inch. 1462-inch. 1464-inch. 1466-inch. 1468-inch. 1470-inch. 1472-inch. 1474-inch. 1476-inch. 1478-inch. 1480-inch. 1482-inch. 1484-inch. 1486-inch. 1488-inch. 1490-inch. 1492-inch. 1494-inch. 1496-inch. 1498-inch. 1500-inch. 1502-inch. 1504-inch. 1506-inch. 1508-inch. 1510-inch. 1512-inch. 1514-inch. 1516-inch. 1518-inch. 1520-inch. 1522-inch. 1524-inch. 1526-inch. 1528-inch. 1530-inch. 1532-inch. 1534-inch. 1536-inch. 1538-inch. 1540-inch. 1542-inch. 1544-inch. 1546-inch. 1548-inch. 1550-inch. 1552-inch. 1554-inch. 1556-inch. 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2286-inch. 2288-inch. 2290-inch. 2292-inch. 2294-inch. 2296-inch. 2298-inch. 2300-inch. 2302-inch. 2304-inch. 2306-inch. 2308-inch. 2310-inch. 2312-inch. 2314-inch. 2316-inch. 2318-inch. 2320-inch. 2322-inch. 2324-inch. 2326-inch. 2328-inch. 2330-inch. 2332-inch. 2334-inch. 2336-inch. 2338-inch. 2340-inch. 2342-inch. 2344-inch. 2346-inch. 2348-inch. 2350-inch. 2352-inch. 2354-inch. 2356-inch. 2358-inch. 2360-inch. 2362-inch. 2364-inch. 2366-inch. 2368-inch. 2370-inch. 2372-inch. 2374-inch. 2376-inch. 2378-inch. 2380-inch. 2382-inch. 2384-inch. 2386-inch. 2388-inch. 2390-inch. 2392-inch. 2394-inch. 2396-inch. 2398-inch. 2400-inch. 2402-inch. 2404-inch. 2406-inch. 2408-inch. 2410-inch. 2412-inch. 2414-inch. 2416-inch. 2418-inch. 2420-inch. 2422-inch. 2424-inch. 2426-inch. 2428-inch. 2430-inch. 2432-inch. 2434-inch. 2436-inch. 2438-inch. 2440-inch. 2442-inch. 2444-inch. 2446-inch. 2448-inch. 2450-inch. 2452-inch. 2454-inch. 2456-inch. 2458-inch. 2460-inch. 2462-inch. 2464-inch. 2466-inch. 2468-inch. 2470-inch. 2472-inch. 2474-inch. 2476-inch. 2478-inch. 2480-inch. 2482-inch. 2484-inch. 2486-inch. 2488-inch. 2490-inch. 2492-inch. 2494-inch. 2496-inch. 2498-inch. 2500-inch. 2502-inch. 2504-inch. 2506-inch. 2508-inch. 2510-inch. 2512-inch. 2514-inch. 2516-inch. 2518-inch. 2520-inch. 2522-inch. 2524-inch. 2526-inch. 2528-inch. 2530-inch. 2532-inch. 2534-inch. 2536-inch. 2538-inch. 2540-inch. 2542-inch. 2544-inch. 2546-inch. 2548-inch. 2550-inch. 2552-inch. 2554-inch. 2556-inch. 2558-inch. 2560-inch. 2562-inch. 2564-inch. 2566-inch. 2568-inch. 2570-inch. 2572-inch. 2574-inch. 2576-inch. 2578-inch. 2580-inch. 2582-inch. 2584-inch. 2586-inch. 2588-inch. 2590-inch. 2592-inch. 2594-inch. 2596-inch. 2598-inch. 2600-inch. 2602-inch. 2604-inch. 2606-inch. 2608-inch. 2610-inch. 2612-inch. 2614-inch. 2616-inch. 2618-inch. 2620-inch. 2622-inch. 2624-inch. 2626-inch. 2628-inch. 2630-inch. 2632-inch. 2634-inch. 2636-inch. 2638-inch. 2640-inch. 2642-inch. 2644-inch. 2646-inch. 2648-inch. 2650-inch. 2652-inch. 2654-inch. 2656-inch. 2658-inch. 2660-inch. 2662-inch. 2664-inch. 2666-inch. 2668-inch. 2670-inch. 2672-inch. 2674-inch. 2676-inch. 2678-inch. 2680-inch. 2682-inch. 2684-inch. 2686-inch. 2688-inch. 2690-inch. 2692-inch. 2694-inch. 2696-inch. 2698-inch. 2700-inch. 2702-inch. 2704-inch. 2706-inch. 2708-inch. 2710-inch. 2712-inch. 2714-inch. 2716-inch. 2718-inch. 2720-inch. 2722-inch. 2724-inch. 2726-inch. 2728-inch. 2730-inch. 2732-inch. 2734-inch. 2736-inch. 2738-inch. 2740-inch. 2742-inch. 2744-inch. 2746-inch. 2748-inch. 2750-inch. 2752-inch. 2754-inch. 2756-inch. 2758-inch. 2760-inch. 2762-inch. 2764-inch. 2766-inch. 2768-inch. 2770-inch. 2772-inch. 2774-inch. 2776-inch. 2778-inch. 2780-inch. 2782-inch. 2784-inch. 2786-inch. 2788-inch. 2790-inch. 2792-inch. 2794-inch. 2796-inch. 2798-inch. 2800-inch. 2802-inch. 2804-inch. 2806-inch. 2808-inch. 2810-inch. 2812-inch. 2814-inch. 2816-inch. 2818-inch. 2820-inch. 2822-inch. 2824-inch. 2826-inch. 2828-inch. 2830-inch. 2832-inch. 2834-inch. 2836-inch. 2838-inch. 2840-inch. 2842-inch. 2844-inch. 2846-inch. 2848-inch. 2850-inch. 2852-inch. 2854-inch. 2856-inch. 2858-inch. 2860-inch. 2862-inch. 2864-inch. 2866-inch. 2868-inch. 2870-inch. 2872-inch. 2874-inch. 2876-inch. 2878-inch. 2880-inch. 2882-inch. 2884-inch. 2886-inch. 2888-inch. 2890-inch. 2892-inch. 2894-inch. 2896-inch. 2898-inch. 2900-inch. 2902-inch. 2904-inch. 2906-inch. 2908-inch. 2910-inch. 2912-inch. 2914-inch. 2916-inch. 2918-inch. 2920-inch. 2922-inch. 2924-inch. 2926-inch. 2928-inch. 2930-inch. 2932-inch. 2934-inch. 2936-inch.

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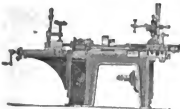
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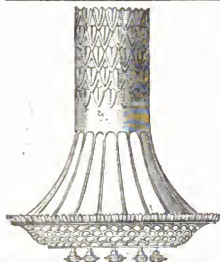
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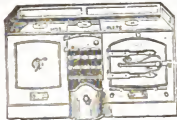
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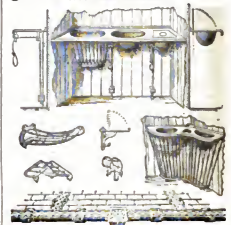
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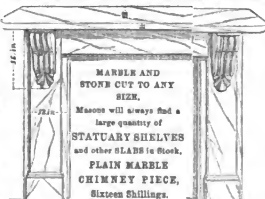
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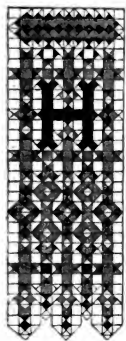
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VOL. XXVIII.—No. 1411.



Incomplete Decorations
at the Palace of
Westminster.

ORACE never was in London. That fact may be stated without fear of contradiction. The sparkle of his imitable verse was never dulled by the fogs of the Thames. Its glow was never checked by the vigour of an English writer. Coracles lay on the banks now covered by palace and by hospital, when the Roman satirist was polishing his epistle ad *Pinodes*, or leisurely pursuing that famous journey to Brandanion over a route to be taken

eighteen centuries later by the Indian Mail.

But though Horace had not the advantage of being able to express his opinion as to English taste and English manners, no words could more happily express the verdict of the small knot of people who, some few days ago, met in the octagonal hall of the Westminster Palace, to enjoy a private view of the Venetian enamel mosaic decorations, than those of the Roman satirist. The large panel, representing St. George, was veiled until the arrival of the First Commissioner, so that time was given to compare, or rather to contrast, the gorgeous colouring of the vaulted and gilded roof, rich in armorial bearings, and bright with gold, with the poverty-stricken baldness of the lower part of the hall.

"Turpius atrum
Ducunt in pascuis mulier formosa superbi;
Spectatum admitti flum. lenocini, amicit?"

In fact the Central Hall, in its present state, is entirely beyond the range of criticism. It is only by chance that the subject is properly presented to the mind. So ridiculous is the contrast between walls and roof that no spectator would imagine that the hall was supposed to be finished. The bare, light-coloured stone below and the glowing colours above, lead to the natural conclusion that the apartment is in the possession of the workmen; and the activity of several of those functionaries, who were engaged in operating on the floor and in washing the *frescoes* of the adjoining corridors, strengthened the illusion. We may as well observe in passing that the latter process is, so far as our experience goes, quite novel, as applied to this description of work. Our climate has had enough blame thrown upon it for rendering *fresco* impossible, and many of the grimy and rueful faces that glare on us from the walls of Westminster give evidence that—be it the fault of climate, of artist, or of material employed—it is a gross misnomer to call those handiworks *fresco* paintings. Still, the scrubbing-brush—or, we believe, it was only a scrubbing flannel—was busily employed on that particular evening over the surface of these historic pieces; so that we were not surprised to see that a large piece of paint (plaster and all) had peeled off the nose of Charles, Prince of Wales, while his royal father, whom the prince is hugging on the occasion, is raising

his hand to order his standard to be erected at Nottingham.

The decoration of the roof of the Central Hall, though betraying an inequality of surface, which the light of 104 gas-burners brought out in unnatural relief, is rich, picturesque, and quite appropriate to a state apartment. It has, besides, the important quality of durability, and, unlike *fresco*, it may be washed with impunity. Whether it be the best mode of decoration may admit of a question; but that it is good, and even excellent, there can be no denial. But such a roof, over an apartment walled with simple white stone, is a simple absurdity. Any but the most uneducated eye is shocked.

The intention of the original design, which was interfered with, as our readers may remember, by an unexpected vote of the House of Commons, was to produce a rich unity of decoration. The central shafts, at each angle, were to be gilded down to their bases. The parallel shafts on either side of these golden columns were to be of white marble. The intermediate moldings were to be headed with red and light-coloured stone, and enriched with gilded roses. All this work is now in plain white stone. The gilding of the ribs of the roof is cut off at the capitals of the shafts, and the head of gold is placed on feet, and legs, and body of clay.

The windows in the Octagon bear marks of the constant warfare which the architect of the Palace has waged with light, or rather with darkness. The difficulty has been felt in this Central Hall (where it might have been thought almost impossible to occur) not less than in other parts of the building. To diminish it, the unfortunate expedient has been adopted of inserting a large quantity of clear, transparent glass in the windows.

The four spaces, or panels, which intervene between these windows, each above a door of the hall, it has been intended to fill with four pictures in mosaic work. One is now complete. It represents St. George, between two female figures, intended for Fortitude and Purity. On the whole, the work is not undeserving of admiration, both as to design and as to execution. St. George is attired in gilded and plated armour, of a very late date, and a German pattern. He holds a sword of disproportionate dimensions, and has a wooden shield on his arm, the carved edge of which is represented with great truth and felicity. The figure of Fortitude, on the right of the saint, bearing a lance with a pennon displaying the red cross, is graceful and effective. The least successful part of the composition is the head of "Purity," which is cropped, low, and square, and very much resembles that of Vitellius, or some other of the more ignoble Roman emperors. Beneath the design itself (which seems to require rather more relief from shadow than has been given) are two escutcheons, one containing the three lions of England, and the other the cross of St. George. Between the two is a plaque, or square space, of gilding, inscribed, "St. George for England;" the centre of which, when seen from the opposite doorway, rather kills the rest of the composition. Seen, however, diagonally, the glare disappears. On the whole, the new specimen of mosaic is splendid and stately, in good keeping with the roof, although, for that very reason, in strong and damaging contrast with the naked walls. The decorations were executed, we should add, from the designs of the architect, Mr. E. M. Barry.

Do not let our readers imagine that we have spoken with more emphasis than the case requires on the subject of the injury done to one of the most important apartments in the Palace of Westminster. The mode in which this great misfortune (for such it is) occurred must be fresh in the minds of those who take an interest in the subject. Mr. Layard was supposed—rightly or wrongly, it matters little—to have exceeded his authority in giving orders for the decoration

of this hall. As a sort of practical hint, the estimates for the purpose were cut down by the House of Commons. Unluckily it was a case of cutting off one's nose to be revenged on one's face. The ex-Minister, in the occupation afforded by Spanish politics, may easily have forgotten the snub. But the fact that a national building has been injured for the sake of an implied "lesson" to a Commissioner of Works is written in plain and very ugly letters on the Octagon Hall. We can very ill afford to have such public proof set up of the ignorance and contempt of the very elementary principles of art which prevail among our representatives. At a time when the very life of English manufacture depends upon the spread of a competent art education among the industrial classes, the fact that the designs of an architect for one of our most conspicuous public places should be messed because the House of Commons was angry with one of the Ministry, can only be considered a national misfortune;—no, not only,—for we regard it also as a national disgrace.

There is another question connected with the decoration of the Palace of Westminster in which a very large number of our readers will be apt to take even a more lively interest than in the æsthetic harmony of the Central Hall; and that is the kind of decoration which should be employed in a national palace. In the Prince's Chamber there are illustrations of the Royal House of Tudor to the sixteenth century. It is very remarkable that these twenty-eight portraits, which have been so long in their present position as to trace their history to the personal impulse of the late Prince Consort, have received but little attention. Authorities on decoration seem ignorant of their existence, or, at all events, of their nature and origin. The darkness of the chamber they adorn, which is such as considerably to obscure their force and beauty, is probably one cause of this neglect. There exists an alby-written series of biographical sketches of the characters, drawn up by Mr. George Wallis, and illustrated by photographs of the portraits, but we believe that it is out of print.

These portraits, which fill panels about half way up the sides of the lofty walls of the Prince's Chamber, are painted on stout millboard, which had previously been saturated with oil, so as to be practically impervious to damp, the uncompromising foe and destroyer of the ancient leather hangings of the Middle Ages. The details of the ornamentation are incised in the surface of the panel, and the whole is then painted and gilded, the effect being as rich as that of enamel, though with less glitter and irregularity of reflection.

King Henry VII., the first monarch of the House of Tudor, is represented from Remée's copy of Holbein's picture, which was destroyed by the fire at Whitehall. He is a majestic and thoughtful figure, dressed in a richly furled robe, which has the peculiarity of two openings in each sleeve, or at all events of a slashed and furled division in the upper part, which seems to be intended to allow the occasional unembarrassed use of the arm. His consort, Elizabeth of York, is taken from the same authority, and wears a hood that resembles an architectural canopy. The two sons and two daughters of this royal pair, Prince Arthur, Henry VIII., Margaret, and Mary, with the ten consorts of this much marrying race of princes, follow. Of these, two are kings, Louis XII. of France (taken from a miniature in a missal), the first husband of Princess Mary, and James IV. of Scotland, the first husband of Princess Margaret, eldest daughter of King Henry VII., and Queen Elizabeth of York, the ancestor of the reigning family.

The three children of King Henry VIII., Edward VI., Mary, and Elizabeth, head the third generation of the Royal House of Tudor: the first is taken from a portrait by Holbein, at

Windsor, and the other two from three portraits by Lucas de Heere, with them ranks the husband of Queen Mary, the infamous Philip II. of Spain, the most bloodthirsty tyrant that has ever boasted of the name of Christian. The first consorts of these princesses follow; Lady Frances Brandon, Marchioness of Dorset, daughter of Princess Mary and of Charles Brandon, Duke of Suffolk; and King James V. of Scotland, son of Princess Margaret. Mary of Lorraine, Duchess Dowager of Longueville, and second wife of King James V., is painted from a portrait in the possession of the Duke of Devonshire.

In the fourth generation ranks the romantic name of Lady Jane Grey, eldest daughter of Great-grandfather Henry VIII., and great-granddaughter of King Henry VII., by his youngest daughter, Princess Mary, together with that of her second cousin, Mary Queen of Scots, daughter of King James V., and great-granddaughter of King Henry VIII., by his eldest daughter, Princess Margaret. King Francis II. of France, first husband of the Queen of Scots; Henry Stuart, Lord Darnley, her second husband and first cousin (being the grandson of Princess Margaret, by her second husband, Archibald Douglas, Earl of Angus); and Lord Guildford Dudley, the unfortunate husband of Lady Jane Grey, complete this interesting series of portraits.

Now we venture to express the opinion that a series of well-authenticated portraits of some of the most illustrious personages of English history, executed by English artists, and completed in a method perfectly suitable for mural architectural decoration, has a claim on the admiration of any man of taste (they nothing of the patriot) as a fitting decoration for the palace of the nation. Of the long series of English sovereigns, the representatives and the allies of successive and rival dynasties, the knights and nobles of the stormy periods during which our institutions struck, like our native oak, their roots deeper into the soil, we have many portraits, coins, tombs, statues, and other memorials scattered over the country. The collection of these, or of well-designed copies of them, into a grand set of historical illustrations for the Palace of Westminster, would be a task of which the nation might well be proud. It would be the compilation of an illustrated history of England that would sink deep into the hearts of our children and our children's children. It would increase tenfold the value of each separate memorial by the co-ordination and the display of the whole.

In the Convent of the Spegiers, near Turin (that votive church of which the soaring dome commands a view of the plains of the Po, and even, on two or three days in the year, of the marble dome of Milan), is a series of portraits of the Popes—from St. Peter to Pius IX. inclusive. We are not able to vouch for the authenticity of the portraits; and we regret to add that Italian justice or seal has scratched out the eyes of the present pontiff. Still, with every allowance, the series is interesting and instructive.

Why should we, who have a history on which we think we are entitled to look back with so much more pride than any Italian ever professes to entertain in referring to the long array of treachery, falsehood, gripping avarice, and red-handed murder that attaches to the history of so many of the Popes,—we refer to no Protestant pleading, but to the pages of the Popes themselves,—why should we neglect the opportunity to form a national series of our own? Nothing sheds so much light on history as portraits.

WESTMINSTER ABBEY.

THE same fascination that compels people to revisit Westminster Abbey after they have once peeped its hallowed precincts, appears to take firm hold of those who write about this deeply interesting edifice. If any compile a book about it, let him be the signatory of the Church, an architect, a miscellaneous writer, or a collector of church notes, we may be sure of an appendix, or a supplement, or a second volume. Dean Stanley has shown that he has enjoyed no exception to this inevitability.* Scarcely have his Memorials of the Abbey been issued by his public, than we find him in the grey study of the edifice taking account of things he missed in that work, or passed too slightly over;

or we see him standing by, as vault after vault is opened to verify or refute traditions of royal burials; or perusing documents pointed out to him, all too late, as yielding fresh facts. Knowing the working of the charm, we are not surprised, accordingly, to find he has now issued a supplement containing a few of his happiest after-thoughts, some elaborations of former statements, an account of the examinations of the royal vaults, some documents, a chronological table of events connected with the history of the Abbey, and twenty-three illustrations. The additions and corrections are made so that they may be read with interest and understanding, without constant reference to the volume they supplement.

We pick out first for mention a communication from Mr. Poole, one of the numerous volunteers who have assisted the dean throughout in his task. In the Clerk of the Works' Register there occurs the term "middle tread," in the index an allusion to a place of interest in the cloisters. This expression, thus incidentally made, has furnished a clue to the kind of pavement that formerly existed in various parts of the Abbey. It applies, as will be guessed immediately, to the pathway of square stones laid down, the centre of a pavement composed of pieces perhaps placed diagonally, thus the numerous intervals, with the addition of a course of square stones against the walls. The two ambulatories, and the two aisles of Henry VII.'s chapel, had likewise their middle treads, as may be still traced. It is known, from an old engraving, that the nave and its aisles were also paved in the same manner, though the numerous intervals, with the necessary vaults, gravenestones, and tombs, had so observed the design when the pavements were repaired about thirty years ago, that it either escaped notice, or was considered beneath it, and these portions of the fabric were laid with diagonal stones, which the pavement, with a border of square stones against the walls, and a line from pillar to pillar. If the middle tread was of no use chiefly for processional purposes, we can see how it came to be disregarded. But this Medieval arrangement was discernible in the north aisle of the choir and in the western chapel, though the pavement was removed, it was handed over to Mr. Scott for the restoration rendered necessary by decay, and for which the insertion of a heating apparatus offered an opportunity, and the middle tread was carefully perpetuated in both. Besides the recovery of a term that was familiar in the mouths of those who have gone before us, and the certainty of a feature of the fabric all traces of which were fast being obliterated, there is another interest in this subject. Ben Jonson's grave is described as "18 in. of square ground in the abbey, which we know to have been one of the square stones of the middle tread," and the account says of it that it was in the path of square stone (the rest is lost) . . . in a pavement square of blue marble about 14 in. square."

Mr. Poole says,—

"This clearly refers to the small stone which Dean Buckland found lying about (it having been displaced for the new pavement), and which he caused to be placed in the rear of the stone just adjacent, and opposite to Ben Jonson's grave. This stone is exactly 17 in. wide, and has so called been 17 in. high, being the normal size of all squares of 'middle tread,' and also the length of the diagonal of a 12-in. square, which latter is the normal size of the smaller squares of the middle tread, which are 18 in. high, and is of Parke's marble, which, when polished and uncoloured, is of a blue colour."

The dean's account of the search for the grave of James I. is pleasantly told. If he has thought well to tone down a supercilious pungency that here and there flashed upon the page in his first volume, as in the reply to Bishop Burnet, and in the anxious inquiries of Henry VIII. concerning the precise grave to be wrought by the nation, for instance, he will have no cause to retrace his steps and, with graver emphasis, elaborate his freshest impressions of the discoveries made in the course of this quest. With bated breath he reads in the reply to Burnet, "the body was headed, by the various vaults and describe their contents to those unable to see into them for themselves. And lest our readers should wonder why the search was undertaken, we must explain that the dean considers 'that the interest of a great ancient cemetery like Westminster Abbey depends in great measure on the knowledge of the exact spots where the illustrious dead repose,'" and as this information was missing in the case of the monarch in question, or rather, as opposite statements were in existence concerning his place of burial, the joint sanction of the Lord Chamberlain and of the First Commis-

sioner of Works was obtained, and excavations made on the spots indicated by the foregoing accounts. It was Mr. D. G. Boscawen, of the Priory Office, who first pointed out the contradictions of Keepe, Crull, and Dart to the statement in the abbey register, that the monarch was buried in the tomb of Henry VII. Two of these authorities, the first-mentioned of whom wrote only fifty years after the death of the monarch, placed the remains of the Scottish king in a vault on the north side of that tomb; and the third named a vault at the east end of the north aisle, where two of his daughters were buried, as the true spot, adding on another page a conflicting statement that the king and his queen rest together in what he called the Duke of Buckingham's tomb. Curiously the true statement in the abbey register was not credited till the other clues had been followed and proved valueless. The first excavation made was at the north-eastern angle of Henry VII.'s tomb, where it was concluded that king and queen must be found lying together. Four large coffins lay in the vault; that was disclosed by the removal of the marble pavement. They proved to be those of the Duke and Duchess of Argyll and two of their daughters. The next spot opened, which was that between Henry VII.'s tomb and the Villiers Chapel, was also found to be true, and south of it three vaults were found, which were examined. One coffin only lay in the first, which was the one nearest to the east west of Henry's tomb. It was roughly shaped to the human form, and bore an inscription on a silver plate, which declared that it was the remains to be those of "Cecilia Crull," favourite daughter, Elizabeth Claypole. The other two were empty. The Sheffield Chapel was next opened; and here a wide brick vault was found of the dimensions given by Dart, and in it lay a long leaden coffin, shaped to the form of the human body, on which was placed a tablet recording the names and titles of James's queen, Anne of Denmark. But still no king. A thrilling impression began to take root among the investigators that some evil-doers must have been at work; and it was (erroneously) thought likely the Parliamentary soldiers, when in possession of the church, might have rifled the grave. Further excavations, however, were made. First, eastwards of the queen's resting-place, where a wall was soon found, which opened into the Sheffield vault, where lay the coffin of the first Duke and Duchess of Buckinghamshire, and three of their children, with that of the second and last Duke. Next, it was resolved to open the vault of the king's mother, Mary Queen of Scots. When this was done a striking scene was disclosed. We quote the account:—

"A vast pile of broken coffins rose from the floor: some of full stature, the larger number varying in size from four to six feet, and all of various shapes, and of various hues; whilst several rows of various shapes were tossed about in irregular groups throughout the vault. The first coffin that attracted the attention was a coffin in the north-west corner, roughly moulded according to the human form and face. It could not be doubted to be that of Henry Frederick, Prince of Wales. The lead of the head was shaped into rude features; the legs and arms indicated, even the forms of the fingers and toes. On the breast was soldered a leaden case, evidently containing the heart, and below were his initials, with the Prince of Wales's feathers, and the date of his death (1612)."

Close to this lamented young prince, along the north wall, were two full-sized coffins, flattened and distorted by the pressure of four or five smaller ones, which were the Duke and Duchess. There was no plate upon either, it was easy, as pointed by Crull's account, to recognise the upper one as that of Arabella Stuart, and the one beneath it, which was saturated with pitch, as that of Mary Queen of Scots. Henry of Oulanda, Mary of Orange, Prince Rupert, and the Hydruntine, Elizabeth of Bohemia, ten children of James II., and the eighteen children of Queen Anne, lay in the crowd of coffins around; but still there was no King James. The Lennox vault was next opened; and then that of Queen Elizabeth. In the last lay two coffins, one resting on the other. The wooden coffin of the great queen, which was crumbling away, but enough remained to show it had been constructed with inch elm, with a carved and panelled oak lid laid upon the thickness of elm; and over all, lid included, was a covering of crimson velvet. An illustration is given of the Tudor rose, initials, and date, incised on the coffin, and the other two occupying the space between the graves of Edward VI. and George II. and his queen, with no result, the vault of the first of these was explored. In it lay a solitary coffin, "rent and deformed, as well as wasted by long corrosion, and perhaps injured by having been examined before." Close by

* Supplement to the first and second editions of "Historical Memorials of Westminster Abbey." By Arthur Percival Stanley, D.D., Dean of Westminster, With Illustrations. London: John Murray, 1868.

shriveled up and unadorned, was found the leaden inscription-plate, which must have been inscribed with the titles of the Protestant king, as the Dean observed in the short interval of nine days while the body lay at Greenwich, and Lady Jane Grey upheld the hopes of the Protestant. In the vault, too, lay another relic, a portion of the frieze of Torregiano's altar. An illustration of this work, taken from Sandford's "Genealogical History," gives a poor idea of it, for the perspective is bad, and the proportions out of all reason. The general effect of it, with its monstrous large coat of arms over the cornice, and slender pillars rising out of substantial bases, is more that of the great bed of Ware than that of Torregiano's masterpiece; which, like that of other works of his period, would be sure to have been exquisite in its proportions as well as details. The frieze, however, it was decided, should be replaced, as nearly as possible in its original position; hence it can now be seen; and the leaden plate that was once upon the poor little prince's coffin was realized to it, and its inscription copied on the pavement over his grave.

The quest was still carried on. An earthen grave in the Mountpennier Chapel was next examined, in which was found a leaden coffin of an unknown person, whom the Dean takes great pains to identify as Cromwell's favourite, General Worsley; and at last that which should have been done at first was taken in hand. The excuse for looking in all the places not mentioned in the "Abbey Register" before examining the place indicated in it, was the impression that the entry in it fully signified the chapel generally, and not the actual tomb of the royal builder of it, combined with a reluctance to disturb "the sacred resting-place of the august founder of the chapel" till every other place had been searched. The Dean shall tell his own tale:—

"It was with a feeling of breathless anxiety, amounting to solemn awe, which caused the hush of the workmen engaged to whisper with bated breath, as the small coffin at the apex of the arch admitted the first glimpse into the mysterious secret which had hitherto shrouded this long reposed. Deep within the sacred vault, as the small coffin, lying side by side; two of them dark and grey with age, the third somewhat brighter and newer, and of three, on the introduction of a light into the aperture, the two older appeared to lead us, one bearing an inscription, and the third surrounded by a wreath of flowers, the latter of the time-placed. The mouth of the cavern was closed, and as I have already intimated, by a huge stone, which, as in every instance, had been reinforced by a smaller one. . . . The third coffin lying on the northern side was immediately found to be that of King James I., as indicated by the question in the long inscription engraved on a copper plate soldered to the lead coffin. . . . The two other coffins were as indisputably those of Henry VII. and his Queen."

An illustration by Mr. George Scharf shows this vault and its royal contents. On the breast of the coffin supposed to be that of the Queen is a large Maltese cross, but no inscription; and on the right hand and on her left lie the two other kings. The Dean makes a great point of this selection of a last resting-place on the part of the Scottish king, deeming it a piece of policy on his part to engrave his ancient Celtic stock upon that of the Tudor family, through whom he had come into possession of the realm. In like manner, it will be remembered, Charles I. was buried in the vault that held the remains of Henry VIII. and Jane Seymour, at Windsor.

One of the documents inserted in this supplement gives a list of the paintings in the Abbey, which will be read with interest by archaeological classes; another tells of relics left to the Duchess of Gloucester, and another refers to "comforting pills," "ointment for the loins," and "hippocra" for the use of the abbot; and to the tipping of the anchorite's house; and the warrant for the disinterment of the magnates of the Common wealth, extracted from "Collectanea Topographica et Genealogica," appearing among the additions. Note has been made too, of the instances in which workmen or others have scratched their names in old times, in places not expected to be seen. Thus, on the Ormond vault, in which Oliver Cromwell was interred, were found, rudely executed, the names B. Dorey and Walter M. G. G. dated 1653, and others coming down to 1704. Again, in Henry VIII's vault, occur the name John Ware, and initials E. C., both dated 1625, which specimens of calligraphical indiscretion has been the means of bringing them into posthumous disgrace for the Dean concludes that they must have both been pious to the theft. The rich velvet pall that once covered the coffin of Henry VII., but which must have disappeared at that time, as no trace of it was to be seen when the vault was opened a few months ago.

No one will find fault with the Dean for yielding to the enchantment that makes every anxious to retain again and again to the altar of the Abbey, and the majority of those who revisit it by the light of his guidance will see more in it than they would otherwise. The volume contains a number of illustrations, some of which might be better than they are.

THE ADAPTATION OF OUR ANCIENT CATHEDRALS TO THE USAGE AND SERVICE OF THE CHURCH OF ENGLAND.

At the last quarterly meeting of the Ecclesiastical Architectural Society, Mr. P. B. Hayward read a paper on the subject at the head of this notice. We print the principal part of it:—

I feel bound to offer a few words of apology to the members of this society for venturing to bring to their notice a subject which has been already fully treated by Mr. G. E. Street in his paper read by him at the Liverpool Church Congress last October, but which, perhaps, is not so generally known as it deserves to be. My excuse is, that the alterations that are contemplated in our own cathedrals, naturally suggest some inquiry as to the principles which should form the basis of cathedral restoration, or rather adaptation to modern requirements; how far these principles have been kept in view in the restorations that have already taken place, or are now in progress in other cathedrals; and, as a natural sequence, whether the plans, which are now before the Dean and Chapter for consideration, are in keeping with these principles. I hope, on these grounds, that a few remarks on this subject may prove worthy of consideration by our Ecclesiastical Architectural Society, which has for years past exercised an undoubted, although unobtrusive, influence for good in all matters relating to church building and church restoration, that have been brought within its cognisance. In this paper I intend to deal merely with the architectural part of the question, leaving to able and wiser pens the task of suggesting any alterations in the constitution of our cathedrals which may tend to bring them more into harmony with the increased activity and earnestness now felt by Churchmen, and so make them in the highest sense of the word the mother churches of their respective dioceses. The one great principle which, as it seems to me, lies at the very root of our public worship, and distinguishes it from all other, is that of unity or oneness. We meet together in God's house, before His holy altar, as one family; clergy and laity alike, each with their appointed duties, to worship one God and Father of all; and the problem that has to be solved is to so plan the arrangements of our public worship, as to secure the arrangements (both, the originally were, for a use and worship differing materially from our own), that this principle may be recognised to the fullest possible extent. The plans of our cathedrals, with their strongly-marked division into nave, choir, transepts, and aisles, undoubtedly present difficulties to the task of adapting them to comprehensive congregational use, and it is only of late years that any attempt whatever has been made to utilise in any degree the naves of our cathedrals for public worship. The services, until quite recently, were invariably conducted in the choir, and the nave was usually separated from the choir by a massive screen, merely formed a vast aisle, where people could stroll about at their leisure during the celebration of divine service in the choir, listening to the music, or admiring the architecture, but in no sense feeling that they were in God's house, or that they were taking part in the service. The choir, in order to accommodate the large congregations at the Sunday services were, in our own cathedral at least, provided with seats to the very altar-steps, in utter defiance of any spirit of reverence, and disregard of the proper use of the choir, and the laity at the service, and turning their backs deliberately on the altar, that they might the better see and hear what was going on. I crave the indulgence of my auditors, if I here remind them that the screens which invariably separated the nave from the choir were not originally intended as a support for the choir, but as the ignorant person would naturally suppose from the general practice of modern times. They were introduced in the thirteenth and fourteenth centuries (according to Dr. Hook, in his Church Dictionary), when the distinction

between clergy and laity was far more decided than in our Church, to mark as emphatically as possible the termination of the congregational part of the church, as opposed to that part devoted to the clergy, and to support the rood or crucifix as an object of adoration to the people. The fiery zeal of the Reformers swept that abomination of Pophish idolatry, the rood, from its place; and in later times, perhaps it unconsciously satiate upon the rood, and the rood was replaced by the organ. There were musical enthusiasts in those times. When the Church began to shake off the lethargy in which she had been so long sunk, men began to inquire, amongst other things, whether the empty naves of our cathedrals might not be turned to some account after all; and so they were gradually thrown open for special services when it was wished to accommodate large congregations than the choir would hold, but still this was done without any general recognition of the great principle of retaining the proper and distinctive uses of the choir, or chancel, and nave. The principle is most clearly set forth in our Book of Common Prayer. In the rubric just before the order for Morning Prayer, it is enjoined that the "chancel shall remain as they have done in times past," and in the rubric at the beginning of the Communion service, we find it ordered that "the Table at the Communion-table, which is a fair linen cloth upon it, shall stand in the body of the church or in the chancel, where Morning and Evening Prayers are appointed to be said." The words "shall remain" in the former rubric, clearly refer, so it seems to me, to the practice of the early church, and not to those later times when the corruptions of the Church of Rome, by the introduction of subordinate altars to the saints in the different parts of the church, destroyed the purity of the earlier worship. The distinctive uses of nave and chancel, or choir, are very clearly described in the following literal translation of the passage in the Decretals of Gregory IX., "That the laics shall not presume to stand or sit among the clerics near the altar, during the celebration of the sacred mysteries, but that that part which is divided by rails from the altar shall be open to the clerics who sing, but for the purpose of praying and communicating that the Holy of Holies shall be open to laics and women;" and in an order made by the Council of Tours in 567, amongst other words are used. This principle is universally recognised in parish churches, where any attempt at correct ritualism is observed; and if so, should it not apply with still greater force in the case of our cathedrals, which are, or ought to be, patterns to their daughter churches? In the recent restorations of the cathedrals of Ely, Lichfield, Hereford, Worcester, Llandaff; and if I mistake not, the Clithere and Durham also, the principle of the separation of the nave and choir, and consequent restoration of the nave and choir to original uses, has been observed with the happiest results, both architecturally and morally; and Mr. Street, in his rebuilding of the nave of Bristol Cathedral will, of course, act in the spirit embodied in the paper already referred to as read by him at the Liverpool Church Congress. I take leave here to refer to a passage from this paper which, in the clearest manner explains his views of cathedral arrangement, and fully sustains the argument I have endeavoured to maintain. He speaks of three objects of importance to be observed in the use of the nave without any altar or provision for a choir. For this he argues there can be no defence whatever, "unless the service is confined to a sermon and hymns, after the manner of University services." Too much stress, it seems to me, cannot be laid upon the importance of the presence of the altar in our public worship. It is as it were the holy of holies, the embodiment of that presence which gives force and efficacy to our prayers. 2nd. The provision in the eastern part of the nave of a second altar, and a second system of choir-seats. For this, he says, there is no precedent in the past. This use of our cathedrals more than one altar is still used; that in St. Alban's Abbey the people's altar is on the west side of the screen; and that in one of the earliest of our Christian churches, that of St. Apollinare in Classe, at Ravenna, there is a choir altar in the apse, and the people's altar in the middle of the nave. I may add that this is further confirmed by the rubric already quoted, which enjoins that the altar shall stand in the body of the church or in the chancel. The objection to this course lies in the reduplication of the choir-seats, and in the retention of the massive screen, which in our own cathedral, at

least in my opinion, goes far to deprive the interior of much of its dignity and proportion. With regard to the third course, I quote his words verbatim. "The third course is the removal of the close screen, and the adapting the choir for use by the clergy and choir only, and where the congregation be great or small. And here I would say, in *limine*, that though I should always regret having to remove any old screen, I am painfully conscious that by insisting on its retention, together with the removal of the choir, I should not be doing a really conservative work. For it cannot be denied that the choir suffers much more in effect by the introduction of additional seats, pews, and stalls for the congregation, than they could suffer by the removal of the choir screen, if this is accompanied by the removal of the additional seats. In place of the close screen, an open screen ought to be erected, which need be no bar to sight or sound, whilst it preserves the proper division between nave and choir. The choir will then, of course, be reserved only for chorists, and we should have to do our utmost to increase their number, to which end I think it might be possible to make use of guilds or fraternities, whose members might, at any rate on Sundays and festivals, take their place in the choir. There can be no question that the chorists would be better heard, and the music much more effective, if they were not hemmed in by a crowd of people, whilst the pupils, placed outside the choir, would generally command the largest area which the plan of our cathedral admits, and would, like the choir, sit equally well of a large congregation or a small one." "might quote much more to the same effect, but this will suffice to show the view that one of the most eminent, as well as conservative and thoughtful church architects of the day takes of this deeply important question. These general remarks on the principles I have endeavoured to advocate, as forming in many people's minds the basis of all cathedral and church restoration, bring me in the next place to consider their practical bearing in the case of our own cathedral. Do the plans which have been prepared by Mr. Scott for the re-arrangement of the interior, at the request of the Dean and Chapter, accord or not with these principles? With all due respect to that venerable body, and to the eminent architect they have called to their assistance, I venture to contend that in the plans that are now prepared, but I trust not yet finally approved, these principles have not been kept in view. Let me briefly describe the general arrangement proposed. The close roof screen retains its present position, unaltered, I believe, in any respect, save by the addition of some canopy work at the top. The seats and stall-work of the choir are all new and of elaborate design, except that the ancient and very interesting misericordie stalls are, of course, retained, and an arrangement of the seats and stalls far easier and more commodious than the bishop's throne is nearly the same as at present. Eastwards of the side gables the space nearly as far as the altar is filled with chairs, arranged facing north and south, a broad passage being left in the middle. The altar is backed with a recess of sumptuous and elaborate design, and a rich pavement of marble and tiles is proposed to be laid. In order to accommodate a larger number of persons than can be seated in the present choir, it is proposed to seat the aisles with chairs, to remove the monuments between the choir and aisles, and to pierce the stone screen at the back of the choir, so as to provide of enabling those who occupy these chairs to hear and see with greater facility than would be practicable at present. The position of the pulpit is shifted from the western to the eastern side of the entrance to the choir from the north aisle, but the position of the bishop's throne remains unaltered. With regard to the remainder of the building westwards of the screen, I believe no alteration whatever is contemplated. It will thus be seen that the proposed alterations consist merely in the renovation of the choir itself, and the shifting of the choir aisles; the present division of the cathedral into two virtually distinct churches by the massive screen being still adhered to. This, I think, is greatly to be regretted, not merely on architectural grounds (although few people will deny that the beauty of the interior would be greatly enhanced by the removal of the screen), but also on account of the negation of that principle of unity, the importance of which I have endeavoured to demonstrate; and lastly, on the ground of practical convenience, on which I shall have a few words to say presently. As regards the seating of the

choir aisles, I cannot help thinking that a serious objection to it lies in the fact of the difference of level between the choir and the aisles. The level of the floor of the choir is at least not less than 3 ft., or possibly 3 ft. 6 in., above that of the aisles, and to this must be added at least 3 ft. more of solid work in the stone screen at the back of the stalls before the pierced work begins, so that the occupants of the aisles would have a solid barrier of 6 ft., if not 7 ft., standing between them from sight and sound. Besides, it seems to me, that this piercing of the screens behind the stalls would be anything but conducive to the comfort of their occupants, who would be exposed to all the draught from the aisles. Permit me now to describe a plan suggesting an alternative arrangement, which was sketched out by my father, at the request of the late bishop as long ago as 1858, and by him submitted to the Chapter, with his full approval. I think I am also correct in saying that the present Bishop of Ely, then Canon Browne, expressed himself strongly in favour of its being carried out. I have little doubt but that this plan, although it appeared to be shelved, eventually led to the fitting up of the nave for the Sunday afternoon services through the liberality of Chancellor Harrington, just twelve months afterwards. This latter arrangement, if I mistake not, was generally considered to be a temporary and tentative one, and that on its success or otherwise depended whether a more comprehensive scheme should be carried out or not. The success has been undoubted, but unfortunately up to the present time no further steps have been taken in the matter. The great distinction between this plan and that of Mr. Scott, lies in the removal of the roof screen, and the organ placed on it, from their present position, and substituting a light open screen of such construction as to be little or no obstacle to sight or sound, and which shall, at the same time, distinctly mark the boundary between nave and choir. The present screen, minus the organ, is proposed to be re-erected between the westernmost of the columns in the nave, removing all the modern panel-work of the lower portion and the mass of masonry behind it, and substituting for it a light screen of tracery-work. In a line with this, across the aisles, corresponding screens would be thrown, the whole forming at the western end of the church a species of narthex, or inner porch, like those frequently met with in foreign cathedrals, and which would undoubtedly contribute materially to the comfort of the congregation. Eastwards of the screen, the whole space of the nave, transepts, and aisles would be available for the congregation, the pulpit being placed against the pier forming the eastern angle of the north transept, so as to command, as far as it is possible, nave, choir, and transepts. The bishop's throne would be restored to its strictly traditional site, that of containing the clergy, chorists, and communicants only, the present return stalls, facing east, being done away with, the stalls for the dean and precentor placed nearest to the screen, facing north and south, and the choir-seats also brought near the screen, so as to allow of the musical portion of the service being heard to the best advantage by the congregation. What to do with the organ is the next consideration. It is proposed to place it in the north aisle, immediately behind the choir-seats, a clear passage of about 8 ft. wide being left in the aisle, and the upper portion of the organ carried over this passage, supported by gables. The pipes would fill up the whole of one of the choir aisles, and might also be made to stand boldly out into the choir itself, so as to allow of the sound being as freely transmitted as possible into the body of the church. The lectern would be placed on the western side of the screen, so as to command nave and transepts. All the eastern part of the choir, above the bishop's throne, would be perfectly open and unencumbered with seats.

Oxford Architectural and Historical Society.—The honorary secretaries (the Rev. P. G. Mead, M.A., University College, and the Rev. H. C. Maxwell Lytze, Christ Church) have issued the following notice:—"It is proposed to commence a series of walks and excursions with the view of exploring the neighbourhood of Oxford, and visiting the chief objects of antiquarian interest. It is intended to visit all those remains which illustrate the history of the country during the British, Roman, Saxon, or Medieval times."

LAMBETH WORKHOUSE COMPETITION.

DESIGNS were received from fifteen of the invited architects whose names we printed a fortnight ago, and are now under consideration. Mr. H. Curry has accepted the invitation of the guardians to assist them in making the selection, and will shortly proceed to examine the drawings. With one exception, a set marked E, the designs bear the names of the respective authors. There is very little architectural art displayed in the designs, nor is it particularly needed; still there is no reason why, without any extra expenditure, good proportions and agreeable forms should not be adopted. Compliance with the instructions, the best means of classification, good arrangements to facilitate administration, beautiful rooms, sound inexpensive construction, are points which must first be looked for; but the design which, besides exhibiting these, provides a structure suggesting care, order, harmoniousness, and regularity, should have the preference. The estimates given in the case of the few designs to which particulars are attached vary. Thus while Messrs. M'Murdo and Wagstaffe name 47,500*l.*, Mr. Francis H. Fowler, whose design has considerable merit, puts down 35,700*l.* as cost. The design by Messrs. Foxlows and Giles & Birrell—plan somewhat widely spread out—is estimated at 47,000*l.* Mr. F. Marrabie, who, like some of the other competitors, sends two designs, has evidently given good consideration to the subject. Messrs. A. & C. Harston's plans have considerable merit, and the same, in a greater or less degree, may be said of those by Messrs. Beaton, Bon & Beaton, Messrs. C. Gray, Searle & Bon, and Mr. P. Parria. Careful weighing of relative merits will be needed in making the selection.

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

THE following correspondence involves questions of serious interest to the profession:—
Sir,—I have just seen with surprise the following paragraph in a London daily paper:—

"Mr. Ayrton, Chief Commissioner of Public Works, has come to an open rupture with Mr. Barry, the architect of the Houses of Parliament, and has said to the latter, and believed that Mr. Barry, indignant at the treatment to which Mr. Barry's successor subjected him, no longer holds his office, and that the whole affair will be brought before the House of Commons."—*London Correspondent of the Irish Times.*

My official relations with Mr. Ayrton, as First Commissioner of Works, have always been of a satisfactory and friendly description, and as far as they are concerned, there is no foundation for the above statement. As, however, I should be very glad of the support of the profession in the trying circumstances in which I am placed, I send you a copy of the letter I have received from Mr. Ayrton, to which, I presume, allusion is made:—

"Office of Works, &c., S.W.

January 22nd, 1870.

"Sir,—I am directed by the First Commissioner of her Majesty's Works, &c., to inform you, that in consequence of various arrangements being made for the conduct of works under this office, the new Palace of Westminster will, from the 31st day of March next, be placed entirely in the charge of the officers of this department; and that the estimates for that service for the ensuing year will therefore be prepared on their responsibility.

I am further to inform you that the First Commissioner will be obliged to you to have all the contract plans and drawings of the Houses of Parliament, and all other papers necessary for affording a complete knowledge of the building, and of the works carried on in connexion therewith, arranged together and deposited in the office of the clerk of the works, in order that they may, when required, be at once handed over to this department.—I am, &c.

GEORGE RUSSELL, Secretary.

E. M. Barry, esq."

Notwithstanding my experience, in the Law Courts' competition, of the unjust treatment which can with impunity be inflicted upon an architect, I could not but be surprised to receive this letter, coming as it did without previous explanation, without notice of disaffection, and at a time when several of the members of the profession were under my direction at the building are still unfinished. I have addressed a letter to the First Lord of the Treasury, and to Mr. Ayrton, pointing out, on public and private grounds, the objections to entrusting one of our chief architectural men-

earthenware, painted with enamel colours and fired, the response is not satisfactory. One competitor, J. B. Evans (44), merits a modified reward. The wrought-iron balcony (50), by William Robson and Henry Robson, deserves great praise, and little less should be said for the balcony (50) designed by G. Emms, and executed by J. Emms & Sons. We will take another opportunity to speak of the works exhibited in the Third Division.

LIVERPOOL ARCHITECTURAL SOCIETY.

At the meeting of this society on the 9th ult., a resolution was passed with reference to a circular from the hon. secretary of the Architectural Exhibition Society, stating that the exhibition must be discontinued after the present year unless better supported, to the effect that the Liverpool Architectural Society "would see with great regret the discontinuance of the Architectural Exhibition in London, and that it is hoped that members of this society will exert themselves to furnish an adequate contribution of works for exhibition this year."

Mr. G. A. Audley read some observations upon the brickwork at the new buildings in connexion with the South Kensington Museum, illustrating practically the method there adopted of cutting and setting the bricks, as it had been explained and exhibited to him at the works. He was of opinion that the method there adopted of treating the bricks by a process more allied to that usually adopted with stone, and sawing and rubbing them to a precisely true face, &c., was calculated to insure a much more finished and artistic result in brickwork than could be obtained by casting the mouldings and ornaments, where ornamental brickwork was to be introduced. A long discussion on brickwork followed; most of the members expressing themselves very much opposed to any treatment of a brick which involved removing the "fire-skin" from it, as tending to reduce very greatly its weather-proof qualities; though the general opinion was that the treatment of brickwork illustrated by Mr. Audley might be most suitable and effective for interiors, as in churches, entrance-halls, and such like, suggestions which Mr. Audley further supplemented by expressing his conviction that it would do equally well for the interior of a dining-room, in place of plastering and paper.

METROPOLITAN IMPROVEMENTS.

THIS excellent map published annually by Mr. Stanford, of Charing-cross, showing the metropolitan railways, tramways, and miscellaneous improvements, for which plans and sections have been deposited in the private bill office, on the 30th of November, preceding the opening of Parliament, is useful for many purposes. It is unfortunate that from the nature of the case such an admirable publication should be in some respects so ephemeral, and that even before Parliament meets so many of the coloured lines should require the application of the sponge, because of the schemes they indicate being already dead. So it is in this instance with several proposed metropolitan railways; the Fulham, Hammersmith, and City; the Islington Railway, narrow gauge on viaduct from the neighbourhood of Finsbury to Islington, which has appeared in former editions of the map; the East and West Metropolitan Junction and Mansion House; and the North-Western and Obaring Cross, from Camden Town to Charing Cross. In the case of the East London Tramway Bill also, there was no appearance before the examiner on standing orders. There are, however, six other Metropolitan Tramway Bills left on foot, the promoters of which propose to lay an aggregate of about 145 miles of road, at a cost of about one million and a half sterling; the promoters of the London Street Tramway Company alone proposing to lay above forty-three miles, and other two companies twenty-seven and twenty-eight miles each. A proposed new market near the Charterhouse has also been dropped.

The most important Bill, as involving works, in the metropolitan district, is that of the Great Eastern Company (Metropolitan Railways, &c.), which is to a great extent a revival, with slight deviations and some additions, of the Bill passed several sessions past, which provides for the extension of the Great Eastern to Finsbury, and the erection of a new station at that new terminus. The new Bill also provides for company yards and works at Leyton and Stamford-

hill. The South-Eastern Company have a Bill for a direct line between Greenwich and Woolwich. A line has been already authorised, but from the heavy cost the company shrink from making it, convinced as they are that they could only do so at a permanent loss. The new line is for a deviation which would be more direct and much less costly. By the new project the line would be carried across the foot of Greenwich Park, much nearer the Observatory than the authorised line, and the Board of Trade will, it is believed, oppose the Bill—an opinion likely to prove fatal. Mr. Brady, the engineer of the company, proposes by a system of cross trenches to make vibration that could reach the Observatory impossible, but his scheme will prove abortive if it fails to convince the astronomical authorities in charge of that important establishment. The Metropolitan District Company has an important Bill for carrying a spur of their system from a point between Southwark and Blackfriars bridges, along under Queen Victoria-street to the Mansion House. The Metropolitan and St. John's Wood Company has a Bill for a short extension of their line westwards to the Edgware-road at Kilburn.

Among the miscellaneous Bills there is one for a subway from Arthur-street, Cannon-street, to pass under the Thames to a point at the south end of London Bridge, whence it will pass under High-street, Borough, to the south side of St. George's Church. Mr. Peter Barlow is its engineer, and it may be supposed that the work will be executed after the pattern of the Tower Subway just completed so successfully. In connexion with the Thames Navigation, certain works, not very important, are proposed at Fulham and Battersea bridges.

OPENING OF THE NEW BATHS IN BATH.

THE Grand Pump-room Hotel and Baths, which a company, co-operating with the Corporation, have erected in Bath, are now completed. The hotel was opened last week, and now the baths also have been opened to the public.

The building was designed to afford to the middle and upper classes the same facilities for the use of the Bath waters as are enjoyed by poor people at the Mineral Water Hospital. The baths occupy the lower part of the south wing of the block, the remainder of the building being appropriated to the purposes of the hotel. The style of the structure harmonises with the facade of the Grand Pump-room and the baths adjoining.

The baths, as described in the local *Chronicle*, are approached on the south wing of the Grand Pump-room Hotel, extending parallel with Bath-ward, and are reached through the archway under the bridge on each side. The entrance forms an entrance to several subways, one of which effects a communication with the king's and queen's bath and the Grand Pump-room. Another subway passes under the central passage between the baths, and terminates in the apartments attached to the ladies' swimming-baths. The various pipes connected with the baths are carried through the subway, which renders them accessible in case of the necessity of repairs. The vestibule leads to an ante-room, from which a corridor, 180 ft. long, 8 ft. wide, and 14 ft. high, runs, having the baths on either side, and connected at the entrance with the hotel adjoining by a short flight of stairs. At this spot a large hydraulic lift has been erected by Messrs. Stickle & Pitt, ascending the whole height of the hotel, so as to enable patients to be lowered from any story in the building to the baths below. The vestibule, ante-room, and corridor, are heated by a steam apparatus, and are paved with encaustic tiles laid out to pattern, the corridor having a glass roof with ornamentally painted iron framework. The shape of the principal bath is octagonal, and somewhat elongated. They are lined with buff glazed tiles, while the top edge is paved with white marble seats of that material being provided in each bath. Stone staircases form the descents to the baths, having on either side copper rails fixed on brass standards with gun-metal tops. The valves for supplying or carrying off water are of the simplest construction, and are placed within convenient reach. The walls of the bath-rooms are inlaid for some distance from the floor with white glazed diamond tiles having intersecting haff bands, and small marble squares at the points of intersection. The floors are laid with hexagonal tiles of a chocolate tint, the spaces between each

tile being filled in with black. The doors to the bath-rooms are locked from the outside by the attendant, thus preventing ingress, while the bathers inside can open the door by simply turning the handle. One of the rooms has an entrance to the hydraulic lift, and is provided with a crane and other apparatus, by means of which the invalid bath can be easily lowered into the water. Besides the first-class baths, there are reclining, douches, shower, vapour, and injection baths, and these, like those of the first-class, are provided with well-furnished dressing-rooms, and very similar conveniences. The requisites for masonry for these rooms have been supplied by Messrs. Tuck & Son.

The ladies' swimming-bath is of ample size and height, and is covered with a light iron and glass roof. The dimensions of the bath are 51 ft. long, by 27 ft. wide, and 33 ft. high. It is approached by a broad and gentle descent of stone steps, and the floor gradually slopes, so that whilst at the end nearest the dressing-rooms the depth of water is 3 ft. 6 in., it increases to 4 ft. 6 in. at the other extremity. The bath contains 83,150 gallons of water, supplied by a syphon from the King's Bath spring, at a heat of 113° Fahrenheit. A piece of sculpture, by the late Mr. Joshua Wall, of Stroud, called the "Wood Nymph" (a water nymph it surely should have been), has been placed here, and is presented by the architects and builders. A general waiting-room is attached to the ladies' swimming-bath, access to it being attained by a flight of stone stairs at the further end of the corridor, and a short passage at the bottom of the stairs, where are hot-air closets on the one side, and private dressing-rooms leading into the bath on the other. The premises will be lighted by gas, for which fittings of an ornamental character have been designed, manufactured, and fixed by Messrs. Tuck & Son. The buildings have been erected under the superintendence of Messrs. Wilson & Wilcox, by Mr. Bladwell, of Bath, for the mason's work; Mr. A. Ridout for the carpenter and joiner's work; Mr. Trewolla for the plumber's work; Mr. R. P. Paine for the painter's work; Mr. E. Herridge was clerk of the works. The establishment has been luxuriously furnished.

THE LAW COURTS AND NATIONAL GALLERY.

SIR.—The reply of the Government official was vague and unsatisfactory. As the Government proposed to exempt the responsibility of the delay from a delay of their own creating?

In the Queen's Speech, while matters of minor importance are paraded, no allusion is made to the deep prevailing distress of the building operatives and others. As a ratepayer, and a heavily taxed one, I object to maintain these operations by an increased rate charge, while "deliberate and unnecessary delay" is being given to certain public works—the Law Courts and National Gallery. It is a mistake to stop these works for a mere caprice, and drive them men to the workhouse or to the "Emigration Mistake Committee." There is work in this country to take up all surplus labour for the next fifty years. A RATEPAYER.

THE THAMES EMBANKMENT WORKS.

THE Metropolitan District Railway works are being now pushed forward, and it is likely that, before the end of the spring, we shall have not only an air-line railway, but a convenient carriage-way from the City to Westminster, where formerly we had foul and pestilential mud-banks, but that we shall have also the advantage of the railway.

The contractors have now 2,000 men, three locomotives, 250 horses, 280 trucks, and 20 steam-cranes at work. The soil, as it is loosened, is carried off by train-wagons to the nearest crane station, where it is hoisted to the surface, transhipped to carts, and then conveyed to some convenient landing-stage, and tilted into a barge alongside the Embankment wall, in which it is carried off to the Millwall Docks, where there is a demand for it as ballast. These barges, of which there are 180 engaged in the work, carry back the bricks, the lime, and the sand which are employed in the construction of the retaining walls. These walls, 7 ft. in thickness, rest upon a foundation of concrete from 2 ft. to 3 ft. in depth, and are carried to a depth of 21 ft. below the level of the rails, above which they rise to a height of 15 ft. 4 in. The width of the

way between them is 25 ft. The roof of the railway is for the most part girder work, the girders being lined with brickwork, but in some parts the rafters of the roof have been adopted. The stations will be at Hangerford, Norfolk-street, and Blackfriars Bridge. As soon as the railway is covered in, the contractors employed by the Board of Works will take charge of the surface, and commence to lay down the new carriage and omnibus roadway.

STRENGTH OF BRICKS.

At a recent meeting of the Glasgow Architectural Society, Mr. John Macdonald, builder, read a paper on the nature and properties of bricks. In the course of it, he said,—"Our clay is so pure that it requires to be adulterated. It is particularly so in the case of machine-made bricks. The operation through which the clay passes in the mill, and the pressure it sustains in being forced into the mould produce such an amalgamation, that were the bricks made thus of pure clay instead of good well-burned bricks coming out of the kiln, each brick would be likely to be sent into a thousand pieces. Home machine-made bricks are all to a greater or less extent, in proportion to the pressure of the clay, composed of ashes or other extraneous matters, the clay pores. In the process of burning, steam is produced, and if there be not a safety-valve through which the steam escapes, an explosion is inevitable,—an explosion which completely destroys the brick. Ashes mixed with clay form numerous small or outlets for the steam, and hence the bricks are preserved. That ashes or other extraneous substances deteriorate the clay, I think must be admitted, but that they do so to such an extent as to impair the usefulness of the brick, may well be doubted. Good bricks be made of pure unadulterated clay, they certainly would sustain a greater pressure; but, on the other hand, it can be shown that bricks made of clay, mixed with ashes, are capable of sustaining a much greater pressure than it is possible to put on them in ordinary erections.

Through the kindness of Messrs. H. More & Son, engineers, of this city, I have had some experiments made as to the pressure bricks are fitted to sustain. No. 1, a machine-made brick (the bricks were produced), made of clay mixed with ashes, stood a pressure of 15 tons, but at that stage wood (yellow pine planks), used to make up the press, gave way, the brick being pressed through the wood, and in consequence the brick was removed, without sustaining any injury. No. 2, of the same quality and make as the foregoing, sustained a pressure of 50 tons, or 22 cwt. to the square inch; the planks again gave way, and the brick was removed from the press. No. 3, a brick the same as No. 2, but with more ashes in it, gave way at a pressure of 50 tons. No. 4, of the same make as the foregoing, but so soft as would not stand exposure to weather, gave indications of yielding at a weight of 25 tons, and crushed at 37 tons 10 cwt. No. 5, made from clay taken from a mine, the clay to a slight extent impregnated with iron ore, sustained a pressure of 70 tons, and crushed at 82 tons. No. 6, a common fire-brick, gave way at a pressure of 42 tons. No. 7 is a brick made of common clay, without mixture or adulteration, but to secure bricks of secure burning, twenty-four holes, from bed to surface, each of $\frac{1}{4}$ -in. in diameter. This brick splintered at a pressure of 55 tons, and gave way crushed at 75 tons. No. 8 is a fire-brick largely used in Glasgow and elsewhere for facing or ornamenting buildings. It is of the same pattern of any tried; it splintered at 22 tons 10 cwt., and crushed at 30 tons. This, I think, is to be accounted for by the fact that it had a recess in both beds each $\frac{1}{4}$ -in. deep, and $\frac{1}{4}$ in. by $\frac{1}{4}$ in. Of course it was not possible to fill this recess with lime to such extent as to give the recessed part of the brick the same resistance to pressure as was on the margin or outer edge of the brick; hence the outer edge gave way, was broken to pieces, when the centre, or recessed part, was none the worse,—quite entire. It is thus evident that a recess of this kind must, and does, impair the bearing power of the brick. These tests, though very satisfactory in demonstrating the pressure good bricks will sustain in an isolated position, fall far short in showing how much weight they will sustain in a wall when well bedded and compactly built together with good lime. Mr. More, who is an authority in

such matters, gives it as his opinion, that "they would sustain 100 per cent. more pressure when thus built than when isolated in the press." My own opinion is that Mr. More is rather under than over the mark; but, even suppose his estimate too high, we can well afford to make large allowance, and still have strength enough left to sustain a much greater weight than it is possible to bring to bear on any wall. Suppose some of the gentlemen present were about to erect a mill, or other building, of five or six stories high, the wall of lower stories (say) three bricks—25 in. thick; and suppose Mr. More's opinion to be correct, every 6 ft. 2 in. of this wall would carry a weight of 60,000 tons. But suppose we take of 50 per cent. from Mr. More's statement, this would still leave strength enough to carry a weight of 30,000 tons—a weight which could not by any possibility be brought to rest on a wall of these dimensions, 6 ft. 2 in. by 25 in. It will thus be seen that as far as strength and endurance are concerned, architects need not hesitate to employ bricks in any buildings they may wish to erect.

A word or two as to the best manner of applying them. Good lime is an essential condition to good brickwork. Three parts of sand to one part of lime shells is the usual prescription. I fear the proportion of sand is rather high; I would reduce it to two and a half. The next point is close bedding. Good lime is only good when used in proper proportion. Light beds and close joints are essential to good brickwork; when these are neglected or disregarded the work cannot be good.

PARLIAMENTARY.

The New Courts of Justice.—Mr. Ayrton, in answer to Mr. Haslam, said that the architect of the new Courts of Justice was engaged, under his direction, in preparing plans for the construction of these courts within the limits of the Act of 1865, and the funds prescribed in it; but he could not inform the hon. gentleman whether those plans would include a communal station between the northern and southern sides of the Strand. It was no part of the scheme at present, and there were no funds for it.

The Thames Embankment.—In reply to a question from Captain Grosvenor, the Chancellor of the Exchequer said that eleven acres of land belonging to the Crown have high-water mark reserved for the purposes of the Thames Embankment. Of these 5½ were gone, for which the Crown had no consideration; the other 5½ the Crown had retained, and he concurred with the Commissioner of Woods and Forests that 2½ of the latter should be applied for building purposes, and not laid out in gardens for public recreation.

The Embankment Viaduct.—In reply to Lord Elob, Mr. Ayrton said that, when the question of making a viaduct from Hangerford Bridge to Wellington-street was before the House, he strongly objected to it, believing the street would never be made. When he acceded to office he wrote a letter to the Metropolitan Board of Works, calling their attention to the recommendations of the committee, and stating that if in their judgment it was for the convenience of the inhabitants of the metropolis, and the interests of the ratepayers, that the construction of that street should be abandoned, he would lay upon himself the responsibility of that. He believed they had introduced a Bill for the purpose of abandoning that work. He had also addressed a letter to the Metropolitan Board, calling their attention to the recommendation of the committee, and requesting that in their report they should take notice of any measure affecting any public building in the metropolis, so that he might see whether the building was one under his charge.

Sites of Places of Worship.—Mr. O. Morgan got leave to introduce a Bill to facilitate the purchase and taking of sites for places of worship and schools. The measure is an attempt to extend to the case of persons desirous of purchasing land for sites of places of worship and poor schools the powers which, under the Lands Clauses Consolidation Act, are vested in companies for commercial purposes.

The Serpentine.—In reply to Mr. Dyce Nicol, Mr. Ayrton said that the works at the Serpentine were, under the contract, to be completed by the 15th of April next, provided they were not interrupted by the severity of the weather, or any other unavoidable cause of delay, of which the Government engineer was to be the judge.

BEREDOS IN ST. NEOT'S, NEAR LISKEARD

A BEREDOS has just been placed in this church, composed principally of hand-painted encaustic tiles. Its length is 19 ft., and the height from the floor is 7 ft. 6 in. There is a panel on each side of the altar, crowned with a perpendicular heading, and surrounded with a thorn leaf border on a purple ground. The panels contain Our Lord's Prayer, the Apostles' Creed, and the Commandments, all written on the tiles, and have diaper ornamentation in sage green and buff around them. The space above the altar is divided into three compartments, following the form of the larger panels. In the centre one is a cross on a blue diaper ground, and in the others the wheat and vine interwoven with scrolls on a red ground. The texts on the scrolls are, "My flesh is meat indeed," and "My blood is drink indeed;" and at the four corners there are evangelistic symbols. Running along the entire length of the recess is the text "Come unto me, all ye that labour and are heavy laden." It was presented to the church by a parishioner, and is the work of Messrs. Cox & Son, of London.

THE PHYSICAL COMMOTIONS THROUGHOUT THE GLOBE.

EARTHQUAKES, burricanes, and other notable phenomena are still taking place with unusual frequency. Reports are still received from Gros Geran, in Germany, of the continuance of the earthquake, and lately the violence and number of the shocks are again to be feared. For some time they had been but few and slight. On the 3rd ult., three were observed, one between four and five o'clock in the morning, and two between four and twelve o'clock in the evening. No further disturbance seems to have taken place till the 14th ult. On that day, however, three shocks were observed, one at half-past six, one at half-past seven, and one shortly after nine in the morning. Just before four o'clock on the morning of the 16th ult., a shock was distinctly felt, and two slight movements without noise were observed on the following night. It is curious how frequently it is in the night that earthquakes occur. Perhaps, however, shocks which would not be noted by day are felt in the stillness of night or early morning.

A sharp shock of earthquake occurred at San Bernardino, in California, on the 14th ult. There have been burricanes of unusual force in America, and nearer home, in Scotland, recently, there was a violent burricane, which, in a narrow line, levelled everything before it. A letter from Blossand, in India, gives an account of a terrible catastrophe which occurred there on the 3rd ult. In the afternoon, at five o'clock, thick yellow clouds appeared on the sea, and a severe west wind, and foretold a severe thunderstorm. After half an hour's lightning the rain came down in torrents, and the blast increased to a burricane. The noise and confusion were terrible, and a more awful scene has seldom been witnessed. All the corrugated iron roofs of dwellings and workshops, and of the new station, were torn off and blown about like feathers before the wind; sheets of half a ton weight were carried a distance of 300 yards. The entire roof of the new stores building was torn off, the bare walls only being left. Carriages were thrown off the rails, driven against the walls, and some were hurled many a way for five miles, at the rate of 30 miles an hour. Large trees were broken off like straw. About 1 in. of rain fell during twenty minutes. The burricane lasted only five minutes, and blew from west to east.

It is notable that a new description of lava is being thrown from the crater of Vesuvius since the last eruption, consisting of crystallized salt. This beautiful phenomenon is said to have hitherto been unknown, at least to this extent, in volcanic natural history. We may here note, by the way, that of late years the meteoric stones which fall differ in composition from those of older days.

A few years ago, we noted in the *Builder*, before any remark as to it, so far as we know, had elsewhere or before appeared in print, that a luminous arch had appeared by night spreading from the zenith, or nearly so, and bent, due to the horizon. The arch has since been occasionally seen, and in the *Suffolk Chronicle* its recurrence is again noted; and in connexion with a brilliant display of the aurora or northern lights, which is another phenomenon of more common occurrence within the last quarter of a century than it seems to have pre-

vionally been. Agitation of the magnetic needle was observed in connexion with this arch or halo. Other strange and new phenomena of a similar kind have been lately observed, especially a coloured halo pending from the zenith, of which Mr. G. Darwin writes in *Scientific Opinion*.

We may finish up these notes by remarking that we also see from *Scientific Opinion* that the bright white equatorial belt of Jupiter has changed colour, or rather has become coloured,—of a fine strong greenish yellow, like yellow lake, which change seems to be rather a portentous sign of the times. It was declared by astronomers some years since, we remember, that the rings of Saturn,—Jupiter's rings,—as we may say,—were becoming still more unstable than heretofore, and that any day they might topple over and collapse. The tremendous rapidity of Jupiter's rotation (greater even than the ringed Saturn's), on the other hand, and his belt phenomena, seem to indicate that he, on the contrary, is on the eve of throwing off and establishing a system of rings, perhaps simultaneously with the collapse of Saturn's; and the change of colour of his equatorial belt is, therefore, we think, a portentous omen of coming changes, even in the state of our own planet.

THE CONDITION OF THE BUILDING TRADE.

SIR,—The best thanks of the unemployed operatives of the building trades are due to your correspondents, "T. L. D." and "Senex," for the suggestions which they have made with the view of removing the depression of trade under which we are at present suffering. May we not hope that some member of the Legislature will speedily call the attention of the Government to the unnecessary delay in the undertaking of sanctioned public works, and that some of the many influential readers of the *Builder* will exert themselves in order to put an end to the present unsatisfactory state of affairs?

Both your correspondents, sir, call for a reduction, in what "T. L. D." terms the "extravagant wages" of building operatives. And, strange to say, they both ignore the fact, that in the metropolis the standard rate of wages paid to skilled artisans is 8d. per hour. Your correspondent, "Senex," suggests that a "Builder's Foreman" has probably been receiving 7d. per hour, and proposes that he consent to a reduction of 1d. per hour. But he 7d. per hour an "extravagant" rate of wages for a competent "Builder's Foreman"? I should have supposed that two guineas per week would not have been considered an excessive remuneration for an individual satisfactorily performing the duties of responsibility and trust which devolve on a builder's foreman. I am a joiner, sir, at present out of employment. I have been receiving 8d. per hour since the last advanced wages in London, in the spring of 1866, and I am not yet prepared to submit to a reduction; but I will willingly comply with it if your correspondents can convince me that their theories are sound, and that my position would be improved by accepting a reduction of wages.

One hundred years ago, sir, Dr. Adam Smith was engaged in preparing for publication his "Inquiry into the Nature and Causes of the Wealth of Nations." At that time, he tells us, "a carpenter in London, and in some other places, is not supposed to last, in his utmost vigour, above eight years." Thank God, our position has somewhat advanced since that time, and I, for one, am unwilling to retrograde. I do not want "extravagant wages," but I want some food for the mind, as well as the body; I want once in a while to get out of the smoke of London, to breathe the fresh country air, and to view the beauties of nature. I need something for my support while sick and out of work; and from sickness and want of employment we lose, on the average, taking one man with another, not less than eight weeks per annum. I must make good wear and tear of tools, replace them when lost, stolen, or burnt, and often purchase new tools to suit a particular job; I want to provide for my family should I die early, and to pay by something to keep me from a dependence on the tender mercies of a Board of Poor-Law Guar-

dians in my old age; and I must confess I do not desire to take my last long rest in a pauper's grave. I want to get all this without occasionally "shooting the moon," and suddenly disappearing from the notice of the landlord, the baker, the butcher, the greengrocer, and other interested individuals. Are these "extravagant" desires? And if not, will "T. L. D." kindly show me the way to accomplish my wishes with my present income, and still to leave an "extravagant" surplus? Then I shall be content to cry *paceati*, and to admit that my demands have been excessive.

But, sir, is the proposed reduction of wages absolutely certain to bring prosperity to the building trade? From undine speculation, the commercial panic, the increase in the railway fares, and other causes which may be allowed to be placed in the same category as "extravagant wages," we have miles of unoccupied house property in the suburban districts of the metropolis. The workman is asked to submit to a reduction of 12½ per cent. in his wages. Is the builder prepared to submit to a corresponding reduction in the prices of the houses he has already finished? If not, it is fully to believe that he will charge less for No. 6, — Terrace, which he contemplates running up next year under reduced rates of wages, than he will for No. 5, which was completed last year at the old prices, and which still remains empty. We want a plain, straight-forward answer to this question. If for the value of house property already completed remains unchanged, neither the operatives nor the public will be benefited by the proposed reduction of wages; but, by a quiet bit of ledger-demin, the 12½ per cent. will be simply transferred from the wages fund to the profits of capital,—a result which, from the workman's point of view, scarcely be regarded as "a commendation" devoutly to be wished.

At a time when bear so much of high wages driving trade out of the country, and when the ignorance of the principles of political economy on the part of the working classes is so universally deplored, I would beg respectfully to submit for the serious consideration of your readers the following quotation from the "Wealth of Nations," book I., chap. 10.—

"In countries which are fast advancing to riches, the low rate of profit may, in the price of many commodities, compensate the high wages of labour, and enable those countries to sell as cheap as their less thriving neighbours, whose rate of wages of labour may be lower."

In reality, high profits tend much more to raise the price of work than high wages. . . . In raising the price of commodities, the rise of wages does not in the same manner as simple interest does in the accumulation of it. The rise of profit operates like compound interest. Our merchants and master manufacturers complain much of the bad effects of high wages in raising the price, and thereby lessening the sale of their goods, both at home and abroad. But, in selling, consumers pay the same high price; they are silent with regard to the pernicious consequences of their own gains; they complain only of those of other people." — J. B. F. F. F.

THE OXFORD SLADE PROFESSOR OF ART.

On the 8th inst. Mr. Ruskin delivered his inaugural lecture as Slade Professor of Art, in the Sheldonian Theatre at Oxford. In the course of it he said:—"Art has of late years received from various sources a very considerable stimulus. Firstly, from the extension of commerce, of which the immediate result has been to increase our jealousy of other nations, and to make us eager to enlarge our wealth by selling our artistic skill. By these means art has been debased, and its true development has been hindered. Secondly, the accumulation of wealth in the hands of a few has created a demand for works of art. Here, too, the effect has been an injurious one, not so much from the fault of the buyer as of the seller, since artists have sought to attract by eccentricity, or by the consulting the more popular taste, forgetting that experience teaches us that sooner or later it is the picture best in itself which is most eagerly sought after. Besides this, there is another form of demand for art which is wholly mischievous. It proceeds from the wealthy class, who merely seek by means of art to promote their pleasure or amuse their indolence. This has especially injured sculpture and work in jewelry. As the case is a moral one, so also must the remedy be. Nothing but moral influences can check this evil, which belongs to a luxurious people and a luxurious age. Lastly, the popular demand for art is much larger. There is a general development and improvement in the taste of the lower classes, which we hope may proceed still further; and our very rubs and crockery may exhibit the results of a highly-cultivated taste. He argued

that the end which we have to set before us is to establish a practical and critical school of English art, especially in those branches in which English schools show peculiar excellence. There are some directions where, owing to our national character, we are almost sure to fail. For example, he believed we shall never excel in decorative design, which needs surrounding influences inaccessible to us. Our great power was the portraiture of living persons. We all need to have a fixed, unselfish purpose for our country and for ourselves. Careless selfishness has too long been our curse. May we not hope that the youth of England will once more rise up to make their country in the schoolmaster's sense the leader of nations, flourishing like a tree planted by the waterside, which bringeth forth her fruit in due season? Mr. Ruskin's second lecture was given on the 16th of February, on "The Relation of Art to Religion."

CAUTION TO AUCTIONEERS.

SIR,—On Tuesday, the 25th ult., at the Mart, Tottenham-road, I had eighteen lots of property to offer for sale, the last being the lease of a house in Queens-street, Chancery, which was to be sold without reserve. The property was knocked down for 375*l.*, and I asked the purchaser to sign the contract. I was engaged for a few minutes, but on returning to the room where the property had been refused to sign the contract, on the plea that he had given 100*l.* more than his interest. He at first denied giving his name; but after my pressing him to do so, I obtained this, and he proposed to go to his employer's office, and come on to mine; afterwards he did so, and was obtained by the purchaser, but on speaking to two leading auctioneers in the City, there was; and although the property is depreciated by the course taken, my client has no legal remedy, as to go to damages would be throwing money to the wind, as a stop ought to be put to such a practice.

STANLEY ROBINSON.

CAUTION TO BUILDERS AND OTHERS ERECTING IRREGULAR BUILDINGS.

THE 38th section of the Metropolitan Building Act requires the builder engaged in building or in executing any work to give notice to the district surveyor notice in writing ten days before such building or work is commenced, stating the situation, area, height, and intended use of the building as about to be commenced, &c.; and the 41st section sets forth that if any builder neglect to give notice in any such cases, or executes any works of which he is hereby required to give notice before giving the same, such builder shall, for every such offence, incur a penalty not exceeding 20*l.*, to be recovered before a Justice of the Peace.

In consequence of several of such cases having occurred repeatedly after due warning had been given, the District Surveyor of Stratford-le-Bow and Poplar felt it incumbent on him, in discharge of his duty, to summon five offenders against the law of the Metropolitan Building Act. Since the builders complained of being George Crabbe, Ebenezer Alexander, Thomas Hodges, William Walker, and Charles Longley, the two latter being persons who had erected wooden structures.

These cases were heard before Mr. Lushington on Wednesday, the 2nd inst., when each of the defendants was convicted in the penalty of 10*l.*, and costs; the defendant, Longley, in two penalties of the same amount, for having caused the erection of two irregular buildings.

At the same time a builder of the name of Stevens was convicted, and ordered to amend an irregularity complained of by the District Surveyor; and three defendants, Allen, Shaw, and another, were also convicted, and ordered to pay outstanding fees, with costs in each case.

NEW WESLEYAN CHAPELS AND SCHOOLS.

THE fifteenth annual report of the Wesleyan Chapel Committee, just now published, shows that the following works have been sanctioned by the committee since the Conference of 1868:—

127 Chapels, at an estimated cost of	£125,720
13 Ministers' Houses, ditto	11,220
20 Schools, ditto	18,800
10 Trained Bands and Alderbury, &c.	16,400
73 Modifications of cases previously sanctioned, at an estimated additional outlay of	21,840
19 Organs	8,267

306 cases Outlay £182,071

The number of chapels is the largest sanctioned in any one year, though the proposed outlay is somewhat less; the average accommodation being 140 sittings per chapel fewer than in the chapel erections sanctioned last year. New schools, built in connexion with

new chapels and settled upon the same trustees and trusts, are not separately reckoned. The number of separate school erections is above the average, though fewer than the very large number reported last year.

Two hundred and sixty-four cases have been returned through the May District Meetings, this year, as completed. Of this number, 175 have no more debt than had been sanctioned. These include 88 chapels, 5 ministers' houses, 22 schoolrooms, 39 enlargements and alterations, and 21 organs. The total cost of these cases is reported as follows:—Chapels, 28,499; ministers' houses, 3,921; schoolrooms, 19,810; enlargements and alterations, 14,670; organs, 3,911.—Total, 140,300, being 4,731 more than the amount reported last year, and, with the exception of the year 1867, the largest amount ever reported.

The entire cost of all erections and enlargements, regular and irregular, reported this year as completed, has been 208,744, being 39,184, less than the sum reported last year, but more than the sum reported in any year except the preceding two years.

The report contains views of a number of the new chapels and schools, of which we reproduce four available examples:—

St. Ashby-de-la-Zouch Chapel and Schools.—The foundation-stone of the new schools was laid October 2nd, 1867, by Mr. John Hall Joyce, of Breckon. The foundation-stone of the new chapel was laid June 10th, 1868, by Sir F. Lytton. The buildings, erected from the designs, and under the superintendence, of Mr. Nicolas Joyce, architect, of Stafford, are in the Geometrical Pointed style of the fourteenth century. The chapel provides seats for 600 persons. It is 64 ft. by 41 ft. inside, and consists of a nave 25 ft. wide, with a span roof 50 ft. high, and two aisles, each 8 ft. wide, with lean-to roofs. An open porch of three arches, 24 ft. long, within which is an inclosed vestibule the same length, gives access to the lower part of the chapel, and the staircase leading to the galleries. At the other end of the chapel is a classroom, 24 ft. by 12 ft., over which is the organ-loft, the roof of which is carried up to the same height as that of the nave. Adjoining the classroom at one end is a vestry for the minister, and at the other a staircase leading to the organ-loft. Between the nave and the aisles are rows of cast-iron columns, the lower parts of which are octagonal, and the upper parts circular, with foliated capitals; these support arches which carry a clearestory and the nave roof. In the aisles are galleries, the floor timbers resting on brackets above the iron columns; there is also

a narrow gallery over the vestibule at the end of the nave. The timbers of the roofs and the sittings in the galleries are of red deal. The gallery fronts, the benches, and the pulpit are of carefully-selected pitch pine. The underside of the roof is boarded with pitch pine, and this, as well as the other woodwork throughout, is varnished. A large circular window over the organ-loft, at the back of the pulpit, is filled with stained glass, and the other windows have cathedral glass of amber and green tints. The chapel is lighted by three coronae suspended from the roof, each having twenty-four gas-jets, and by brackets with double lights under the galleries. It is warmed by hot water; the pipes are square in section, laid on the floor of the passages alongside of the raised cills on which the benches are fixed, and are effective without being unsightly. The walls of the chapel on the ground-floor are two bricks and a half and three bricks in thickness. The walls are faced with red pressed bricks, with bands and patterns of blue bricks, and dressings of Hollington stone; the roofs are covered with slates of varied shades of colour. The principal features, externally, are the clearestory, pierced with circular cusped windows; the entrance arcade, of stone, with carved capitals and parapet of open work; and a large four-light traceried window in the principal gable over the entrance. The cost of the school buildings has been about 600l., and of the chapel nearly 2,000l. beyond the value of the materials of the old building. The contractors for the principal parts of the work have been Mr. Proudman, of Ashby; Messrs. Lowe & Sons, and Mr. Bassett, of Burton; and Mr. S. Fish, of Harborough.

Mortyn-road Chapel, Brighton Hill Circuit.—In that part of Brighton in which this chapel has been placed, not fewer than 4,000 houses were erected within six years. The chapel designs, including numerous class-rooms, with two large rooms for Sunday-school and other purposes, were prepared by Messrs. Tarring & Son, architects; but it was thought more prudent at first to erect only the chapel and minister's vestry. A contract for this portion of the works was undertaken by Messrs. Myers & Son, for 6,760l.

Memorial stones were laid on the 23rd of June, 1868, by Sir Francis Lytton, Mr. Thomas Hazlehurst, and Mr. A. McArthur; and on Tuesday, September 29th, 1869, the building was opened for Divine worship.

Yerriil Chapel.—The necessity for better Wesleyan Chapel accommodation in Yerriil has been long felt. Through the liberality of Sir Francis Lytton, of London, Messrs. Esnor, of Milborne Port, friends in the Yerriil Circuit, and others,

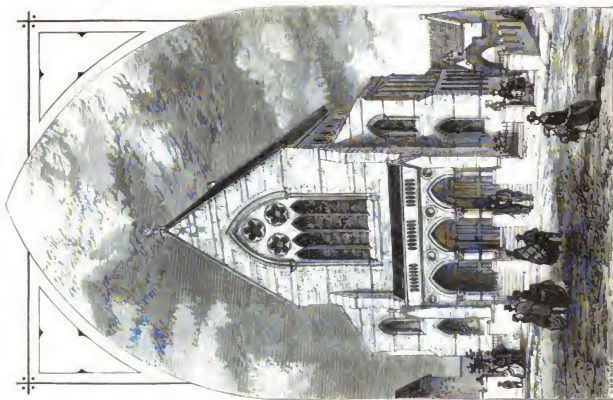
the way became open to commence a new chapel. The trustees were enabled to enter into a contract with Messrs. Bartlett & Harewood, of Yerriil, for the erection of a chapel from plans prepared by Mr. Alexander Lander, of Barnstaple, under whose superintendence the works have been carried out. The foundation-stone was laid on the 22nd of February, 1869. The chapel is in the Early English style, entirely built of local Ham Hill stone by Mr. James Staple, of Stoke. It is calculated to accommodate 650 persons, having side galleries and choir-loft. The gallery pillars are carried up to a swept ceiling roof, dividing the chapel constructively into nave and aisle; the nave having an apical termination in the choir-loft. There is a minister's vestry, with basement accommodation at the end of the chapel. The whole of the woodwork is in pitch pine and oak. The chapel is lighted with pendants from the longitudinal arcading over the gallery pillars, and small corona lights under the galleries. It is to be heated with hot water by Messrs. Garton & King, of Exeter. The seats are open, with leaning backs, book-boards, and hat-rails. The total outlay, including site, will be about 3,000l.

Newton Abbot Chapel and School, Torquay Circuit.—It is asserted that of late years Wesleyan Methodism has made considerable advancement in South Devon. New and commodious chapels have been opened at Ipplepen, Biddon, Paignton, and Newton Abbot, all within the boundary of the Torquay Circuit before its division last Conference, involving an outlay of 7,000l. The foundation-stone of the latter was laid by Mr. John Bowden, of Ipplepen. A spacious school-room at the rear of the property had been previously erected and paid for at a cost of 410l. The new chapel was opened on Thursday, May 21st, 1868. The style of the building is Early English, with open roof ceiled at the hammer-beam. The walls are of native limestone, relieved with Bath stone windows, doorways, and pinnacles. The length is 85 ft.; width, 46 ft.; and height to wall plate, 32 ft. The seats are open benches with sloping backs, and lightly stained. The font has a marble pillar, with Bath stone pediment and bowl; and it, and the service-books, communion-cloths, carpets, and cushions, are the special gifts of the society classes and friends. In a recess is a powerful organ. A gallery has been placed over the main entrance lobby for the accommodation of the Sunday scholars. The drawings were prepared at the Devon Office by Mr. J. W. Rowell, and the work has been executed by Mr. G. Hawkins, builder, Newton.

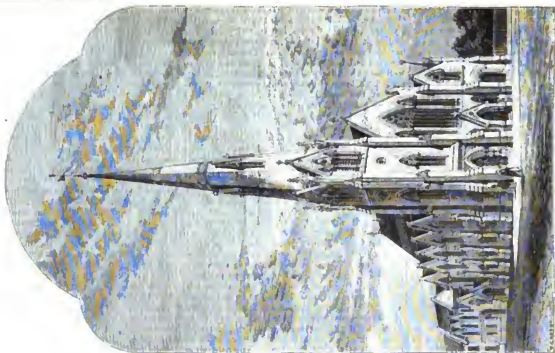
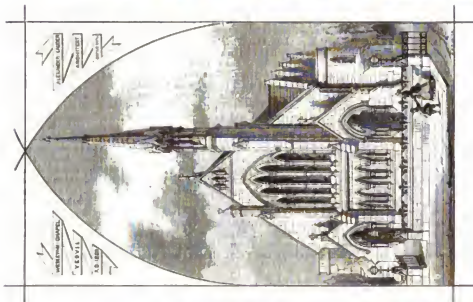


NEWTON ABBOT CHAPEL AND SCHOOL, TORQUAY CIRCUIT.

NEW WESLEYAN CHAPELS.



ASHBY-DE-LA-ZOUCH CHAPEL.—MR. NICHOLAS JOYCE, ARCHITECT.

MOSTYN ROAD CHAPEL, BRINTON.
MR. J. TASSING & SON, ARCHITECTS.



CHRIST CHURCH, FINCHLEY, MIDDLESEX.—MR. JOHN NORTON, ARCHITECT.

CHRIST CHURCH, FINCHLEY.

The plan of this church includes nave, north and south aisles, north and south transepts, chancel, organ-chamber, vestry, narthex, and tower.

The nave is 92 ft. long by 32 ft. wide, 34 ft. high to stone cornice, and 52 ft. 6 in. to the apex of boarded roof. There is an aisle of five bays to aisles. The columns are quatrefoil on plan, with detached shafts in angles, handed, with moulded bases and carved capitals. The arches are formed of a double order of stone, with a brick upper course of alternate black and red; the spandrels are of brick, with panels of stone, carved with various emblems: shafts carry principals of the roof. The cornice is of stone, with rich foliage of Early character running the whole length of nave. The roof is formed with double principals, filled in with pierced tracery, and boarded on the under-side, forming a painted vault. The western door is double, under a richly-moulded arch with foliage figures, and the tympanum being carved with a representation of the Ascension, the doors themselves are square-headed. Above the west door is a circular rose-window of large proportions, with geometric tracery, the jambs being brought down square with marble columns in angles, and panels of marble of varied colour and design in spandrels, the whole inclosed in moulded arches with labels over. It is filled with stained glass, by Bell. The west gable is surmounted with crocketed coping, and with cross on apex and gurgyles at angles, a parapet running round nave. The nave floor is tiled. This being the only portion of the design now completed, the arcades are filled in with temporary brickwork; the windows of the future aisles being fixed in it. The aisle windows are 13 ft. wide, and bay separately gabled with copings and ogival finials and buttresses terminating in canopies. The roofs are internally boarded to pointed vault.

The transepts are 23 ft. by 23 ft., opening from nave by lofty lancet arches, boarded in a similar manner to nave and aisles, and lighted by four-light windows to each, with geometric tracery, crocketed gables, with crossed and rectangular buttresses at angles, with gurgyles and canopies. The aisle windows are complete, with circles in head, under moulded arches. The chancel, which is 35 ft. long by 32 ft. wide, opens into the nave by a lofty moulded cusped arch, carried on shafts on foliated corbels. The east window is of elaborate geometric tracery of six lights, separated by shafted mullions, crocketed gable, canopied and crocketed buttresses. The chancel is 23 ft. high to the foliated cornice; vaulting shafts carry ribs of a similar character to nave. It is raised three steps above nave, and the sanctuary three additional steps, besides the altar dais; there are double rows of stalls. The floor is tiled in ornamental patterns. The organ-chamber is separated from the sanctuary by an arched wall with tracery, and with screens of metal-work.

The tower is situated on the south side of the south aisle. It is 12 ft. square on plan, and is of five stages, the two upper ones having open arcades, with pointed cinquefoil arches, and is terminated with a rich cornice and open parapet, and at angles four octagonal open turrets. The tower is finished with an octagonal spire of slate, the whole rising to a height of 150 ft. finished with a vane.

The narthex, or western porch, is 12 ft. wide, and is the whole width of the nave, arched with trefoil cusped arches, with a parapet of open early tracery. The stone used in the construction is Potter Newton, with Bath stone dressings; and the internal lining is of red and black brick, in bands, patterns, and ornamental designs. The roof is all pointed and vaulted, and covered with Delabole slates and tile coverings. The pulpit has carved and sculptured panels, foliated caps and cornices, with moulded and marble shafts, and inlay of marble and jasper. The font is square on plan, with shafts and inlay of marble. The works at present executed have been carried out by Mr. Henry Wheeler, of Highbury, from the designs and under the superintendence of Mr. John Norton, architect.

Engineering in India.—The Viceroy of India has applied to the Home Government to send out a civil engineer, possessed of special experience, to be employed in examining the coast of India, with the view of discovering sites for ports.

PROGRESS OF HARROGATE.

THERE are evidences of progress on every hand. No new mills are being erected, or mammoth workshops, but the growing prosperity of the town—as an inland spot—is shown by the fact that hotels are being enlarged, and mansions, villas, and houses of a superior character are springing up more rapidly than ever. More and more of those who formerly resided in the suburbs of Leeds, Bradford, and other towns, are taking advantage of the increased railway facilities and coming to reside at this beautiful spot, and it seems as if Harrogate will double its resident population before many years have elapsed. Many first-class mansions, for example, have been lately erected in the Victoria Park. They are principally in the Gothic and Italian styles of architecture. The West End Park, situate opposite the Prince of Wales Hotel, now forms a formidable rival to the Victoria Park. The premium offered by the company, who bought sixty-six acres here, for the best plan for laying out the estate with building sites and first-class villas, was awarded to Mr. Hirst, of Bristol, architect. Either a second premium was awarded to Mr. H. E. Bow, of this town, or an arrangement [was made] whereby it was agreed that Mr. Hirst should take the premium and Mr. Bow carry out the design. However, Mr. Bow appears to have secured the principal management of the estate. There are above 300 sites, we believe, including a site for a church. Many of the mansions in Victoria Park have also been designed by Mr. Hirst and Mr. Bow. Land has been purchased for a new estate in Leeds-road, and a number of houses are to be erected, and operations on a large scale for manufacturing bricks, &c., are to be carried on elsewhere in that locality. In fact, a building mania is raging in Harrogate at the present time.

Harrogate Public Rooms Competition.—For the works here Messrs. Shutt & Thompson and Mr. Dyson sent in a plan each, and Mr. H. Bow two. Both Mr. Bow's and also Messrs. Shutt & Thompson's plans provided for a colonnade, 24 ft. wide, extending the entire length of the present terrace, a pump-room, and a ladies' and gentlemen's cloak and retiring rooms, &c. Mr. Dyson's plans provided for a colonnade the same length as the others, but 12 ft. wide, and in addition an elegant covered lounge or conservatory, occupying the entire ground (most) front of the concert-room. Messrs. Shutt & Thompson's and Mr. Dyson's designs included a stone frontage to the pump-room, in a line with the front of the present building, the covered colonnade, &c., being of iron and glass. Mr. Bow's plans were all iron and glass, the pump-room, &c., to the principal front having the appearance of two octagonal conservatories, one with a tower 45 ft. in height. Ultimately the directors, after hearing explanations from the several architects, selected Mr. Bow's plan, No. 1 for the elevation and No. 2 for the ground-plan. Mr. Bow was instructed to obtain tenders at once, so that the work may be completed by the opening of the season.

A NEW TOWN-HALL FOR POPLAR.

A MEETING of the trustees of the parish of All Saints, Poplar, was held on the evening of Thursday, the 10th inst., at the Board-room of Poplar Workhouse, to receive from a special committee who had been deputed to open tenders submitted for the erection of a new town-hall and parochial offices for the use of the parish.

The new buildings have been rendered necessary in consequence of the recent purchase of the old Poplar Workhouse by the guardians of the union; the room hitherto used as a town-hall, and the parochial offices, apartments occupied by the parish officials as parochial offices, being comprised in the purchase. The guardians paid the trustees the sum of 10,000*l.* for the workhouse and the freehold of the land on which it stands, and the sanction of the Charity Commissioners has recently been obtained for the appropriation of this sum towards the erection of a new town-hall and parochial offices.

The acquisition of a site on which to erect the proposed new buildings has been a task of many months, in consequence of the difficulty experienced in obtaining land which could be regarded as sufficiently central or easy of access. The difficulty was obviated, however, by the seasonable discontinuance of the use of the old parish watch-house by the Commissioners of Police, who have just completed the erection of a more com-

modious station in the East-India Dock-road. The parish authorities at once opened negotiations with the commissioners, which terminated in the purchase by the trustees of the watch-house and the land on which it stood, the building having since been demolished. Representations were also made to the authorities of Brinsford College, to whom belong a large garden-ground attached to the rectory-house, and adjoining the site of the watch-house; and arrangements were made by which the trustees have acquired a portion of this land. The site is in Newby-place, and immediately facing the principal entrance to the parish church.

Messrs. Harston & Harston, of East-India Dock-road, are the architects of the new building; and their estimate for the works was 7,550*l.* The report of the special committee intimated that sixteen tenders had been received, as follows:—

Mann, Kentish-town	£9,300
Corran, Lewisham	9,200
Watts, Commercial-street	9,000
Moor, Commercial-road	8,670
Watts, Brunley	8,400
Wicks, Bayswater	8,350
Kilby, Limehouse	8,350
Till, Hammersmith	8,300
Heard, St. George's-street	8,100
Higgs, Lambeth	8,175
Myers & Son, Lambeth	8,000
Robertson & Co., Lambeth	7,900
Blackmore & Morley, Haggerston	7,800
Cobb & Vaughan, Kingsland	7,700
Ferry & Co., St. Albans	7,550
Sheffield, East-India-road	7,475

The committee submitted that, as Messrs. Crabb & Vaughan's, Messrs. Perry & Co.'s, and Mr. Sheffield's tender were the three lowest, the trustees confine their attention to the same, and select that which they thought the most substantial tender.

After some discussion, Mr. Sheffield's tender was accepted; and the committee were empowered—subject to the sanction proposed by Mr. Sheffield being satisfactory—to commence operations at once.

A FIXATIVE FOR DRAWINGS.

CORRESPONDENTS ask us, from time to time, the way to set pencil and charcoal drawings. We have just had an opportunity of testing an invention by M. Bonquet, one of the masters of the Government Schools in Paris, for "permanently and instantaneously fixing every kind of fugitive design, such as those produced by chalk, crayons, pastels, lead pencils, or other similar materials." It consists of a liquid which is blown through a little glass apparatus, in the shape of a minute shower that spreads itself over the paper, and the drawing is not rubbed by a brush being passed over it. Through the fineness of the spray the paper is not cooked, neither does the liquid appear to leave any mark. Our test was severe, and upon rubbing the drawing operated upon, with India rubber, nothing moved, nor was any appearance of a smear produced. It seems a very valuable preparation. According to the London agents, Cribb & Son, it is equally efficacious with photographs.

CAST-IRON GIRDEBS, KING'S COLLEGE, LONDON.

SIR,—Your notice in the *Builder* of the 12th inst., page 120, and the accompanying diagrams, show clearly the cause of the falling in of these girdebs and ceiling.

It appears from the girdebs broken by Mr. George Dines to test their strength that the transverse girder A broke with 40 tons applied in the centre, and the longitudinal girder B with 27 tons applied also in the centre.

This experiment would give a constant of about 28 for this simple formula; viz., transverse girder A,—

$$28 \times 20' \times 7\frac{1}{2}' \times 1\frac{1}{2}' = 50.83 \text{ tons B.W. in centre.}$$

$$\text{Longitudinal girder B,—}$$

$$28 \times 15\frac{1}{2}' \times 7\frac{1}{2}' \times 1\frac{1}{2}' = 27.2 \text{ tons B.W. in centre.}$$

$$\text{Therefore the iron must have been very good, as ordinary cast iron is seldom calculated higher than for transverse girder A,—}$$

$$28 \times 20' \times 7\frac{1}{2}' \times 1\frac{1}{2}' = 36.4583 \text{ tons B.W. in centre.}$$

$$\text{And for Longitudinal Girder B,—}$$

$$28 \times 15\frac{1}{2}' \times 7\frac{1}{2}' \times 1\frac{1}{2}' = 24.27 \text{ tons B.W. in centre.}$$

$$\text{And taking } \frac{1}{2} \text{ of B.W. as safe load, the trans-}$$

for designs for folding screens, given by Messrs. Turner & Sons. Miss Gann gained the third place for the thirty-nine bouasses offered by the Committee of Council on Education, and to be competed for by 149 head masters and mistresses of schools of art throughout the kingdom.

The Chairman, aided by Professor Donaldson, having presented the various prizes, pointed out that in this school the prizes represented work done in common with schools of art all over the country, and indeed in Italy and to be successful, the pupils had done well among themselves and in their own school, but that they had attained a certain standard in competition with all other art schools. The result of these competitions and examinations proved that the school was doing a good work. He had known something of this school for a long time, and he remembered it when it was in a very different position from what it was now, in for its early history many difficulties were recorded. He contrasted the present excellent premises in Bloomsbury with those which the school had in its early career when turned out of Somerset House, the confined premises at that time occupied being known as the "Rop-shop." Now, he said, it had everything that was needful—good rooms and good teachers. He proceeded to point out that much more was in consequence now expected of teachers and students than could have been expected of their predecessors. If the students to whom these advantages were open pursued their work in a slovenly or desultory manner, they were committing a fraud, not only upon those who were immediately interested, but upon the public. Complaints were now heard louder than ever respecting the want of art-culture in our population, and of the necessity of its application to our manufactures and designs, and it had been found that where proper attention had been bestowed upon studies of designs and manufactures, the character of English art had been raised. Her Majesty took great interest in the school, and, if for no other reason than loyalty, the students should endeavor to use their best exertions in their studies. He had referred to the interest felt in the extension of art education for the benefit of English manufactures, a feeling which was expressed by the fact that it was known as "technical education." He most cordially desired to see technical instruction promoted, and he believed such instruction to be of high national importance. But he thought that those who were pressing for this kind of instruction should not forget that it was possible to improve, and to connect a development in the kind of instruction with the maintenance of another kind of instruction—*vis.*, in literary education. In the report of a Commission appointed some years ago by the Emperor of the French to examine the condition of technical instruction in Germany and Switzerland, it was told of a devoted friend and successful cultivator of the sciences. This gentleman, it was there stated, was originally persuaded that scientific study was calculated, as well as the culture of letters, to form the habit of clearly expressing thought in good language, at the same time that it was capable of giving a higher tone to the mind. But, being appointed professor in the Munich Polytechnic Institute, he had to deal with pupils from the trade school or scientific gymnasium, and also with those from the literary gymnasium. He then soon made the discovery that, though the practical and scientific studies appeared at first most competent to follow out their applications, those who came from the literary gymnasium, after completing their studies there, were not long before they surpassed the others. He (Sir Stafford) had brought that quotation with him that he might impress upon the mind of those who believed him what he was desirous of expressing, for what was said in that report of literature preparing men for the study of science was equally true of literature preparing the mind for the study of art. Those who studied art should not only aim to attain the mechanical skill of art, but they should also to the cultivation and development of their minds with a view of making a better use of that mechanical skill. It was to be remembered that art was not a matter of so much colour upon a bit of paper, but was the expression of ideas, and the mind must be cultivated in order to obtain these ideas. He declared that it was his intention to give a prize to encourage this literary teaching and cultivation in connexion with art studies. He believed the school would take a high place in the promotion of education generally in this country. It would

also be the means of raising the status of women. At present it was a most melancholy sight to see one-half of our population treated as if it was an affliction to have to receive female education. One of the results of education would be to open new fields of employment to female artists and art-teachers, and women would take a place more satisfactory to themselves and more beneficial to the country as a whole.

Sir Digby Wyatt also made an interesting address in the course of which he expressed a hope that by means of these schools the females of England would acquire that degree of independence which it was desirable they should possess.

Mr. Godwin expressed his intention of offering a prize of £1. 5s. for the best shell cameo cut in the school, the cameo remaining the property of the artist. He then moved a vote of thanks to the President and Commissioners of the Council on Education for the loan of the lecture theatre, and to Mr. Cole, the president, and other officers of the Museum.

This was seconded by Professor Donaldson, and carried.

Mr. H. Cole returned thanks, and proposed thanks to Sir Stafford Northcote, which brought the meeting to a close.

ELEVATED FOOTWAYS FOR OVER-CROWDED THOROUGHFARES.

OBSERVING in your publication of the 1st ult. a paragraph on "The Proposal for Widening the Streets of London," and referring to an illustration of Mr. Taylor's suggestions, where that gentleman proposes to set back the shops, and to form a colonnade, arcade, &c., and considering that London has put its veto against any such arrangements by sweeping away some years ago the colonnade in Regent-street, where it was not only found to be a nuisance in the congregating of loiterers, but inimical to the interest of tradesmen, as their goods were in perpetual obscurity by being in its frowning shade, I beg to submit a sketch for your perusal, which proposes to construct in overcrowded thoroughfares elevated footways over the carriage-way, by placing a series of iron columns on the line of the kerbs of the present footpaths, ranging with the lamp-posts (the columns would answer for the latter), and throw light ornamental girders from each column over the carriage-way, and to form on each side footpaths of suitable width, with crossings at convenient distances, leaving the intermediate space open, the footpaths to be of stout glass, or other suitable material. Access to the footpaths to be gained by staircases springing from the most convenient lateral streets, clear of the main footpaths. By such a method there would be little or no obstruction to light, no interference with the thoroughfare to either carriage or footway below; it would afford every facility to pedestrians in getting through over, at present, most densely crowded streets, and would be the means of giving a perfectly safe crossing, by keeping clear of the carriage-way. As our most crowded streets are all places of business, should there appear to be any objection in raising a footway to the level of the first-floor windows, let the tradesmen turn these windows into show-rooms. I apprehend there would be nothing lost by this.

C. TATE.

OPENING OF CORN EXCHANGE AND FREEMASONS' HALL, WIMBORNE.

THE new building, with conversion of an old, forming a corn exchange and Freemasons' Hall, has been inaugurated. The site is that of the old Wesleyan chapel, near the market, which was purchased at a cost of 500*l.*, by a limited liability company, composed of Freemasons, with shares to the amount of 1,000*l.*, and the remainder required is being raised by subscriptions. The old chapel was demolished, so far as it was found necessary to conform with the design for the new building, and the new has been made by Mr. Walter J. Fletcher, of Wimborne, architect. The space or yard at the entrance was all taken in, and the front of the exchange carried out to the full extent of the property. Then sufficient space was taken out of the building to provide a suitable entrance, with a large assembly room, and the whole of the remainder of the space was thrown into the large hall. The building is erected in the Doric style, and consists of a large hall to be used for the purposes of a market-room, county court, and assembly-room for public

purposes, which is 60 ft. in length, with an average width of 36 ft. At the main entrance from the open space known as the corn-market, is a portico with three-quarter columns on either side, and capped with an entablature. Above this, on a galler on the pediment, is the motto, "Audi, Vide, Tace," with the square and compasses and the number of the lodge, 622. The hall is approached by a portico, in which are folding doors lighted with glass panels. At the west-end the room is considerably wider than at the entrance, and here is a raised platform which will be used for county-court business, while it can be extended when required for entertainments and other public purposes. The room is lighted by a soft light in the shape of a Maltese cross, the outside being formed of panes of glass, 6 ft. square, embossed with Mosaic devices; the central part forming the circle of the cross is formed by a dome, also filled with ornamental glass, and supplies the ventilation. Around the ceiling is a wide double cornice, which tends to take off the deformity of the room. There are two windows on the west-end on the north side of the room, of figured glass, the circular headings being filled with symbols of Masonry. There are two fireplaces with marble mantel-shelves, and stalls have been provided for the dealers attending the exchange. Underneath is a large cellar, with a bowling-green, ladies' retiring-rooms, and other conveniences. The lodge-room is reached by a flight of stone steps, and the entrance will be from the north side of the building, where there is a porch of similar design to that at the entrance of the corn exchange. This apartment is 25 ft. in length by 13 ft. wide. Both the large hall and the lodge-room are lighted by sun-burners from the ceiling, and bracket lights are also affixed to the walls of each apartment. The floor is of pitch pine, 1½ in. in thickness, in narrow widths, and connected with galvanised iron dowels. The building was erected by Mr. Richard Froud, of Longham, near Wimborne, and Messrs. Wimborne and Froud, carried out the decorative arrangements, Messrs. Hopkins & Pike supplying the gas fixtures.

FROM AMERICA.

THE colossal bronze statue of Abraham Lincoln, to be erected in Union-square, New York, has just been completed at the works of Robert Wood & Co., in Philadelphia. It was cast from a model by H. K. Brown, is 11 ft. high, and is said to be a faithful likeness of the original.

Mr. James Lenox, of New York, has asked the Legislature of that State, now in session at Albany, for an act of incorporation for the Lenox Library, an institution which he proposes to found. The bill offers a sum of two hundred and thirty thousand dollars, for the erection of suitable buildings, declaring that if this amount should be insufficient for the purpose he will give as much more. He intends handing over to the trustees, as a nucleus for the library, his entire collection of paintings, statuary, and precious volumes, adding that no amount of money shall be withheld that may be needed for making the Lenox Library the largest and most excellent institution of the kind in the United States.

A dollar subscription is in progress at Danbury, Iowa, for a monument to the memory of a soldier who died at that city. The inscription on the old cedar cross over his grave was:—"Julian Dubaque, Miner of the Mines of Spain, died March 24th, 1810, aged 45½ years."

A second tunnel is to be built under the Chicago River at Chicago, for the purpose of connecting the city with the lake shore. The work has already begun. Under the river, which is 300 ft. wide, it is to consist of three passageways. The east one for foot passengers, and the other two for horses and vehicles drawn by horses. The east passageway is to be 12 ft. high, and the bottom of the upper passage and the top of the lower passage. The width of this passageway is to be 10 ft. The other passageways are to be 11 ft. wide. The opening approaches to the tunnel on each side, and the passageway for horses, are to be paved with wooden block pavement (the whole distance being 1,800 lineal feet), resting on a lake shore sand. The contract requires that the river shall be entirely free and unobstructed, as also North and South Water streets, by the 1st day of April, 1871, and the tunnel to be completed and ready for public use by the 1st day of July, 1871. This is about the same length of time employed in the construction

of the Washington-street tunnel. The total cost of La Salle-street tunnel is expected to be upwards of 475,000 dollars.

Under the heading, or "caption," as the *Call* calls it, of "How to Succeed," that paper urges that mechanics should establish business for themselves as soon as they possibly can. No man, as a mere employee, gains the position which he ought to hold in the community. The mechanic, after having served an apprenticeship, may find it best to labour for those who are established in business, until he has gained experience and a certain amount of means; but as soon as these points are secured, it is his duty to become a master of his profession, and to place himself in communication with those who seek the services of his craft. The man who works for himself is his own master, which is one important consideration with the mechanic who places a proper estimate upon himself. And then, in times of depression, the man who carries on business need not necessarily be thrown out of employment.

DISSENTING CHURCH-BUILDING NEWS.

Hull.—Fish-street Congregational Church has recently been re-opened, after undergoing a renovation and reseating. The old front, which stood some 8 ft. from the street line, has been taken down, and the church brought out to the street, whereby additional accommodation has been obtained in the gallery. The new front is erected in an adaptation of the Italian style. The building is re-seated throughout in red fir and pine, slightly stained and varnished. A new communion-table, table, and pulpit have also been fixed, these being in oak. The vestibule is paved with Maw's plain tiles, laid to a pattern. The building is lighted at night by means of large sun-lights, with the brackets beneath the galleries. Mr. Samuel Masgrave, of Hull, was the architect.

Liverpool.—At the corner of St. Domingo-vaie, Brockfield-road North, a piece of land has been purchased for the erection of a Methodist New Connexion Chapel and Schools. The expenditure, exclusive of the cost of the site, will be about 4,000l. Towards this sum there has been 1,000l. already paid. It is intended to have the schools ready for occupation by the beginning of April next, when divine service will be temporarily conducted in them till the completion of the chapel, which will be proceeded with without delay. The chapel will be built in the style of the thirteenth century, and the school-buildings will comprise two large school-rooms, with class-rooms underneath. There will be accommodation in the chapel for 800, and the edifice will contain two side and one end gallery, besides an organ gallery. There will also be a small tower and spire, about 120 ft. high, and the whole structure will be built of red sandstone, with Stourton stone dressings. The architects are Messrs. Hill & Swann, of Leeds and Sheffield. Mr. Thomas Clowtham is chief contractor, and Messrs. Grindrod & Hargreaves are sub-contractors. The chief stone of the schools has been laid.

Croft (near Darlington).—The foundation-stone of a Wesleyan Methodist Chapel has been laid at Croft. It is intended that this new place of worship, the first which the denomination has erected in the village, shall accommodate 150 persons, and its cost is estimated at 550l. The contractor for the brickwork and plastering is Mr. Joseph Simpson, and the joiner work is in the hands of Mr. Martin, of Darlington.

Stratford.—The memorial stone of a new Presbyterian church has been laid at the corner of Forest-lane, Maryland-point, Stratford. The builder is Mr. Easer, and the clerk of works, Mr. Gilson. The church will hold between 800 and 900 persons. The spire is 120 ft. high; the cost of building upwards of 2,000l.

Ilkeston.—The Wesleyans of Ilkeston have determined upon building a new chapel in New-street, at a cost of 1,000l. Their present chapel, which was built some years since, at a cost of 600l., is in Market-street, an inconvenient place; but proposed new one will be central. The ground has already been purchased, the price paid being 200l.

Staindrop.—A new Wesleyan Methodist chapel was opened in Staindrop, on Tuesday last. The building is of stone; the style Romanesque. The interior has a wagon-headed panelled ceiling, and is fitted up with open benches, to accommodate 200 people. The architect was Mr. John Ross, of Darlington.

Watford.—The new Wesleyan chapel which has been erected in the Queen's-road, at a cost of 1,837l., has been opened. The chapel is in the Early English style. The building is intimately designed for a schoolhouse, as it is proposed to erect a chapel on a piece of land adjoining, but the present building will probably be used for some years to come as a chapel. It contains sittings for 300 persons. The architect was Mr. Pearson, of Rickmansworth, and the contractors were Messrs. G. & J. Waterman, of Watford.

Shrewsbury.—The memorial stone of St. Nicholas Presbyterian Church has been laid. The plans of the church and school-room were prepared by Mr. R. C. Bonnet, of Weymouth, architect. The tender of Mr. Farmer, builder, Ironbridge, was accepted. The total cost of building and site will be about 3,500l.

ENGRAVERS OF ORNAMENT.*

A USEFUL little manual of the engravers of ornament, which might well bear elaboration on some future occasion, has been compiled by Mr. Marshall. It contains an alphabetical list of 177 engravers who have occasionally turned their attention to ornament, and gives a few particulars of each of them, briefly told, with indication of the absence or presence, the abundance or scarcity, of specimens of their works in the South Kensington establishment and in the British Museum. The author says he compiled it for the use of schools of art and public instruction generally. Doubtless it will be useful for both purposes; but it would have been more so if it had been less of a skeleton. The facts selected for mention in the account of each engraver are given in a style which we must forgive for calling as dry as old bones. It can scarcely be considered encouraging to students in schools of art to see the birth, the life, the works, and death of an eminent engraver dismissed in six lines. Yet Mr. Marshall has, in several instances, disposed of a gifted and industrious lifetime in still less of his space. This is how he sums up the labours of Rooker:—

"Rooker, Edward, born at London, *etc.* This designer and engraver possessed an admirable talent for engraving architectural views, of which he has given an extraordinary example in his large plate of the section of St. Paul's Cathedral, from a drawing by Wale. There are two views in London, after P. Sancluy; twelve views in England, after the same; and others."

And then Edward Rooker is laid aside; and Jean le Royer brought before us. Another English engraver, whose name calls up departed osteries, is treated with similar brevity:—

"Bairst, James, born at London, 1740. Little is known of the circumstances of his life. He engraved some of the plates which illustrate the publications of the Society of Antiquaries."

And then Antoine François Baudouin, Fleming, is introduced to us. Some of the most known foreign engravers are, however, treated at greater length. We would that Mr. Marshall had made a few inquiries whereby he might have put us into possession of new particulars respecting English engravers. His selection of these has been somewhat arbitrary. Hogarth is not mentioned, although his first efforts were exclusively heraldic, and many of his pieces may have been strictly deemed ornamental, by virtue of their details, as those of Albert Dürer, who is included in the catalogue.

Students consulting Mr. Marshall's book to settle the disputed point respecting the discovery of the origin of engraving, will find that he attributes it to Finiguerra, in the stereotyped manner, although this is now denied. It would have been better to have warned them of this last fact than to have closed their eyes to it.

A point in the little work that must be mentioned with praise is the insertion, in nearly every case, of the monogram or initials affixed by each engraver to his works. These signs are given in facsimile, which will render the identification of a print easy to those to whom familiarity with the subject has not rendered the information needless. Taken collectively, the signatures are exceedingly interesting. Prefixed to the biographical notices is an chronological table of the engravers of ornament, of the Italian, German, Dutch, French, and English schools. A little more amplification will render the work of more serious service. It is a nucleus worthy of the additional labour.

* Handbook of Engravers of Ornament. By Julius Marshall. Printed for Her Majesty's Stationery Office, 1869.

Books Received.

"**ATCHLEY'S Builders' Price Book for 1870**" includes some valuable additional matter, such as prices for the West Riding of Yorkshire; a long list of the principal marks or brands which are to be found on the ends of most deals, planks, &c., and an elaborate paper by Mr. F. Campin, C.E., on the Application of Iron to Building Purposes. Touching the marks, we cannot go so far as the writer of the Introduction, who says,—"With these tables of reference it is possible for any one quite ignorant of the trade to decide on the description of a parcel of deals, &c., before him, so far as to be certain from whence they came, and the quality which he is buying." Some additional information would be first needed; nevertheless, the list is a beginning, and may lead to what will be a valuable contribution.—"**The Body and its Health**," a Book for Primary Schools. By E. D. Mapother, M.D. Dublin: Falconer. London: Simpkin, Marshall, & Co.—A tiny book on physiology, by a Professor of Physiology, of the Royal College of Surgeons, however well adapted for children, and this one is so—may well be read with advantage by many a parent and other grown person. It is illustrated by twenty-one engravings, but there is room for more.—"**A Twelfth Scheme for the Prevention of the Damage by the Flooding of the River Irwell**," which flows past Manchester, has been proposed in a printed form by Mr. S. C. Trapp, late borough surveyor of Salford. Mr. Trapp proposes a row of sluices at each of the weirs, and as Mr. Bateman has proposed at Throstle Nest. The cost, he says, would not exceed 15,000l. for each weir through the borough, or 60,000l. for the four, viz., Douglas, Adelphi, Throstle Nest, and Mode Wheel; including telegraphic communication from one to another of the weirs and sluices.

Miscellaneous.

Columbia Market.—The wholesale fish-market, which is to be held here, will open, without any formalities, on Monday morning next. After the wholesale market is over, many persons who have secured standings intend to carry on a retail market there in fish on Thursday, Friday, and Saturday next. Owing to the completion of the railway system, and the packages of the rougher sort of fish (which it will be of great advantage to the poor to be enabled to buy at a cheap rate) can now be brought to London at a low cost. The loan of 27,000l. made by the Public Works Commissioners to improve Great Yarmouth harbour (15,000l. of which are already expended), is expected largely to benefit the fish trade. We shall be very glad indeed to find the market successful, but must confess that we do not expect it will be so immediately. The central area has been covered in, and the floorings are formed with Sessel Asphalt, by Messrs. Arnall & Stodart, under contract with Messrs. W. Obitt & Co., the builders.

Edinburgh Architectural Association.—The usual fortnightly meeting of this Association was held last week, in the Rooms, 5, St. Andrew-square, Mr. William Beattie, architect, in the chair. After the election of several new members, a paper was read by Mr. W. Campbell, entitled "Ancient Walling in Scotland." Mr. Campbell gave a brief historical résumé of the origin and development of plaster work in ancient times, proving its extreme antiquity by a number of quotations from the Old Testament and various Greek and Roman authors. Among existing specimens of old plaster work, few remain anterior to the Gothic period of architecture. Mr. Campbell called attention to a number of fine examples of old work to be found in Edinburgh and its neighborhood. In concluding, he pointed out the chief deficiencies of modern plaster work, and gave some valuable practical hints as to how these might be remedied. A discussion followed the reading of the paper, and the thanks of the meeting were awarded to Mr. Campbell.

St. James's, Taunton.—The tower of St. James's Church, Taunton, is to be pulled down, and a *fac simile* of it is to be built, at a cost of between 3,000l. and 4,000l. The tower, which is a well-known specimen of the Perpendicular style, has long been in a dilapidated state.

Society for the Encouragement of the Fine Arts.—Mr. Hyde Clarke gave a lecture to the members of this society on Thursday, on "The Culture of the Fine Arts in its Influence on Industrial Pursuits;"—Mr. Henry Cole, C.B., in the chair. The lecturer, after noticing the various aspects under which the subject might be treated, remarked that in nature the beautiful being as widely distributed as the useful, he could not consider the various bodies of artists are mere ministers to wealth and luxury; but, on the contrary, he thought it would be found now, as in former prominent periods of the world's history, that art and commerce always flourished together, and that, were it even possible to suppress the fine arts in England it would be necessary to restore them on account of the rivalry of other nations. Next, passing in review the progress of art in England during the present century, and the various events favouring national and foreign trade, he observed that it was not until 1850 foreign rivalry was seriously felt, and then commenting on the great services rendered to art by the chairman in 1855, he ascribed the further improvement of the public taste to the influence of women, whose preference for the more artistic foreign productions, and the articles of dress, which had forced our manufacturers to pay more attention to beauty of form and colour. He concluded with some remarks on the more intelligent administration of the fine arts in France, Prussia, and Switzerland, compared to that of England, insisting that wherever the public taste was neglected the public profit was. Dr. Haime then addressed the meeting with reference to Continental and Prussian art, and was followed by Captain Britten, Mr. Tidy, and Mr. Dutton on the different points raised by the lecturer, and by Mr. Cole, the chairman, who, not agreeing that we were so backward as to the foreign nations, characterised French art as epicurean or most excellent when connected with the cultivation of the senses.

The Watford Sewage Question.—At a recent meeting of the Local Board, the chairman read a report of the surveyor (Mr. Lovejoy), which was accompanied with plans and estimates of the proposed deodorising and irrigating works. He proposed to sink the tanks, which were built for the lining process, by raising the bottom and the side and the under walls, and to construct a carrier, flitch, &c., as shown in the plans and sections. With regard to the irrigation works, for the quantity of land proposed to be taken, the engine and pumps at the outfall works would be ample sufficient. The report then proceeded to describe the arrangements and process. The cost of these works was estimated as follows:—Alterations to tanks, with flitches, sluices, carrier, concrete, brickwork, &c., £251. 6s.; sewers, £67. 14s.; Mr. Humbert said £254. 9s.; total, £1,007. 11s. Mr. Humbert said Lord Essex had offered to let land to the Board for 2l. 10s. an acre, and to sell the engine and pumps, &c., for 125l., to be released from all obligations to the Board. Mr. Austin, C.E., explained his process, and exhibited a model of his portable cesspool and filters. Mr. Trevellick recommended his A B C process, and offered to work the system at Watford for 300l. a year, or take the manufactured sewage alone as his remuneration, the Board paying the cost of working. Mr. Humbert said that when the tanks were altered, they might adopt either the Broad or the Leamington system, or use Mr. McDonnell's powder. Nothing could be more economical than the use of sulphuric acid and clay, if it were not for the royalty of 50l. a year. Ultimately, the further consideration of the subject was adjourned.

Fall of a Warehouse at Strand.—The warehouse of Messrs. Ford, Brothers, adjoining Byfleet Mills, Stonehouse, has suddenly fallen in, burying beneath the debris a sliding running from the Midland Railway into the river. The warehouses, at the time of the accident, contained 5,000 sacks of grain, and the whole of this, together with two counting-houses and their contents, were precipitated on the siding and into the canal, which was entirely blocked up. The warehouses were of two stories high, and built principally of stone, but there is not a single wall left standing; all is a mass of ruins covering an area of about 100 ft. and upwards of 30 ft. high. Fortunately at the time of the accident there was no one on the premises. The general opinion is, that the warehouse was overladen with grain. The damage is estimated at between 1,000l. and 1,500l.

Sanitary Condition of Exeter.—The death-rate in October, November, and December, 1869, was unusually high in Exeter. The deaths were at the rate of 30 in the 1,000 per annum, while the rate for the whole of the United Kingdom was only 23½. The average death-rate in all the great towns put together was 25½; to the 1,000, while in the fourteen monster towns and cities in the kingdom the average was 27½. Exeter was therefore considerably worse than any sort of fair average that could be struck. There are very large towns worse than Exeter, viz., Sheffield, 30½ to the 1,000; and Manchester, 30½ to the 1,000; but all the great towns, and the average of the country, fall below the quarter.

Of the second-class towns, to which class Exeter belongs, there are forty-six, of which only three are worse than Exeter, viz., Blackburn, 38 to the 1,000; Swansea, 31½; and Gateshead, 30½. Of the 974 districts in Exeter, in 1859, 678 took place in St. Sidwell's district (containing the parish of St. Sidwell, Holy Trinity, St. Mary Major, St. Martin, and the Close), and the remaining 306 in St. David's district, comprising the rest of the city within the municipal boundaries. During the latter months of last summer the nuisance of the mill-heap, which was more intolerable than ever, was the foul odour that polluted the valley of Holywell-street. The people who live in that neighbourhood smell the odour in their sitting-rooms and bedrooms, even now, when doors and shutters are closed.

New Baths for Southport.—The new baths about to be erected on the site of the late Victoria Baths, Promenade, will be on a more extensive scale than these were. The accommodation will consist of the following:—*Day-bathmen's Department.*—First-class tepid swimming-bath, 76 ft. by 30 ft.; second-class ditto, 61 ft. by 27 ft.; first-class cold plunge-bath, 61 ft. by 26 ft. Five first-class private baths, each with two dressing-rooms, and shower and douche baths, and water-closet attached; two first-class private medicated bath-rooms; twelve second-class private baths. *Ladies' Department.*—First-class tepid swimming-bath, 66 ft. by 28 ft.; second-class ditto, 50 ft. by 26 ft.; first-class cold plunge bath, 27 ft. by 14 ft. Seven first-class private baths, double, as for gentlemen; two first-class cold plunge-baths, double, as for gentlemen; two first-class private baths. The whole of the baths will be on the ground-floor, and will be lighted by top lights and ventilated. The entrance, or principal front, will be towards the Promenade, the centre being two-storied. The style of architecture will be Palladian-Italian, and the material externally red brick and stone. The directors have arranged to provide Turkish baths. The architects are Messrs. Horton & Bridgford, of Manchester; and the engineer is Mr. Charles H. Beloe, of Liverpool.

The East London Water Supply.—The water of the East London Water Company is declared by Professor Frankland, in a report on the subject, to be "very turbid, owing to the presence of much suspended brawny matter full of living organisms. Among the latter vibrios are found." It further appears that in 100,000 tons of water the East London Water Company present their customers with 35 tons of foreign solid matter, including sewage. As the *Tower Herald* independently remarks, "a law which punishes a little grocer for selling dirt as 'tea-dust' ought to be made to reach a body of monopolists which sells sewage under the title of 'pure water.'" The Whitechapel and Limehouse Boards of Works are in the water in the matter in the London Water Board, at the suggestion of Mr. Arthur Harston and Mr. Blundell, have referred it to a committee for inquiry and report; and the Whitechapel Board have written to the Board of Trade on the subject.

Sewage Self-cleaning Process.—Mr. Latham, the engineer of the Croydon Board of Health, has had one of his patented solid sewage extruders put up at the town-sewer at the Bramstone Barn; and the editor of the local *Advertiser* says it is working efficiently. He compares it to a huge tambourine on edge, with six shaves crossing it. The solids are separated, and hence the sewage cleansed, by lifting these solids into barrels, to be emptied by Archimedes' screws into tanks, where the water and the fibrous refuse, to be sold as manure. The water passes through a turbine, and turns the separator. The town sewage is thus filtered by help of one man. New charcoal ventilators for the sewers, patented by Mr. Latham, are being made at an iron-foundry in Croydon.

Railway Matters.—Through tickets round the world by rail and steamer, are being arranged for by one of the leading eastern railways of the United States. The tickets are to be good until used, giving travellers opportunities to make excursions in Japan, China, the Holy Land, or wherever tourists may be disposed to leave the main line of travel. The price is fixed from New York as far east as Alexandria, Egypt, and west to Yokohama and Shanghai. An agent has gone out to arrange with the English steamship lines between China and the head of the Red Sea and the railway to Alexandria. The whole trip can be made within ninety days, and the entire cost but at the utmost 1,500 miles in coin.—The traffic receipts of the railways in the United Kingdom for the week, ending 11th February, 1870, upon a mileage of 12,544, amount to 736,314d., being equal to 58d. 14s. per mile. For the corresponding week of last year the receipts were 701,107l., the number of miles open 12,335, or 60d. 14s. per mile. A comparison of the two weeks shows an increase in the aggregate receipts of 35,204d., and in the number of miles open of 209.

Artisans' Dwellings and the Co-operative Movement.—The annual *soiree* in connexion with the Artisans' and General Dwellings Company was held on the 9th inst. at Badley's Hotel, Blackfriars. The chair was occupied by the Earl of Lichfield, who, after a short address, in support of the co-operative movement, under which the society was established, it encouraged habits of providence, and enabled its members to obtain better houses and at a lower rate than they otherwise could. The Earl of Shaftesbury said the co-operative movement was the desire of the people of England and the whole of the Continent of Europe, as well as of America, and Englishmen had the honour that the movement originated in this country. All classes of society were dependent on each other, and what was wanted in the present day was a grand union of the classes, with mutual respect, kindness, and succour. Lord Elcho thought nothing was better calculated to bring about a union of the different classes of society than the establishment of such societies as this.

The Accident at Abbey Mills Pumping Station.—In reply to Mr. Knight, at the Court of Common Council, Mr. Deputy Lowman Taylor, one of the representatives of the City at the Metropolitan Board of Works, said he had communicated with the engineers as to the cause of the accident at the pumping station, and had been informed that the air chamber, which was placed in the centre, was of cast-iron, and from some unexplained cause the air in it must have been exhausted, so that it received a shock direct from the water. The consequence was the escape of being repaired, and steps were being taken to prevent any stoppage of the works should any accident occur in the future.

Proposed Public Building for Free Library at Wottonham.—At a preliminary meeting, convened by circular, held in the Museum, Wheeler-gate, it has been resolved to form a Public Free Lending Library, a Reference Library, Reading-rooms, Museum, Lecture-rooms, &c., for the town. An attempt will be made to obtain funds toward the building, model an institution, to be vested in the town council for ever, and to be managed in accordance with the Free Library and Museum Act already adopted by the town. Donations are solicited, payable in quarterly or other instalments within one year, so that 1,000l. or upwards may be raised. A provisional committee was appointed.

Stained Glass and Symbolism.—The Bury Town Council is troubled about what has been termed a "dark window," which has been inserted in St. James's Church, without, it is said, the sanction of the Council. The dispute has been carried on between two Captains, one of whom thinks the church ought not to be disfigured with non-sacral Papiistical symbols, the other that his brother captain and friends are unnecessarily punctilious.

Opening of a New Market Hall at Silverdale.—The opening of the new Market-hall at Silverdale has been inaugurated by a public dinner, at which the works of a new brick building, standing in High-street, and the inhabitants are indebted to the private enterprise of Mr. William Steele, of Macclesley, at whose expense it has been provided. It is intended to be opened two days a week, Mondays and Saturdays,—for market purposes.

Discovery of a Monument of a Biblical King of Moab.—A correspondent of the *Journal Officiel*, writing from Jerusalem, says,—"An archaeological monument of the greatest importance has just been discovered by M. Clermont-Ganneau, interpreter to the French consulate here. It is a large basalt pillar, found to the east of the Dead Sea, on the territory of the ancient Moabites. On it is engraved an inscription of more than thirty lines, in Phœnician characters, commencing by these words:—'I, Meaah, son of Chamos.' . . . Now, Chamos was a King of Moab, mentioned in the Bible, and contemporary of the Prophet Eliaha and Jehoahaz, King of Judah, and with Ahab, Abahiah, and Jehoahaz, Kings of Israel. . . . The monument relates the struggle of Meaah against the King of Israel, and enumerates the towns constructed and the temples raised by Meaah, and consecrated by him to the god of his nation at Chamos. The age of this monument is fixed by its synchronism with Jewish history: it dates from nine centuries before the Christian era, and from about 100 years after Solomon. It is nearly two centuries older than the celebrated sarcophagus of Richmanassar, King of Sidon. The Phœnician characters in which it is written, present an Archaic aspect, not hitherto found to a similar extent in any of the Phœnician remains discovered. . . . This precious text has just been sent to the Academy of Inscriptions by M. Ch. Clermont-Ganneau, with a memoir, which will be immediately published."

New Carving Machine.—In the machine invented by Mr. Gear, of Newhaven, U.S., the wood to be carved is fastened firmly to the bed by screwable clamps adjustable to suit any required size of wood, and the cutters are fastened to a spindle moved by a universal joint in any direction upon the bed of the machine. The cutter is guided by hand, the guide resting against the pattern. The carving can be gauged to any required depth, and made to conform to any required pattern. A fan blows away chips as fast as they are produced, leaving the work constantly in view of the operator. The same tool that cuts the mortise also cuts the tenon, the two pieces of work to be dovetailed being clamped together to the end of the table.

Shereenness.—The Victoria Hall and Public Rooms have been inaugurated. The style of the building is the pseudo-Italian Gothic of the day. The chief features of the plan include hall and restaurant, with refreshment, reading, smoking, conversation, library, retiring, and waiting rooms. There is a large concert-hall, 100 ft. by 53 ft. 10 in. in height, with gallery, stage, lobby, corridors, and waiting and cloak rooms. The Victoria Hall will be one of the best rooms in the county for bazaars, concerts, promenades, entertainments, and assemblies of all kinds. The building includes a smaller hall, to be used as a Masonic lodge-room, to which preparation and ante rooms are attached.

The Open Spaces at the Mansion-house.—At the last Court of Common Council, Mr. Deputy Fry presented a petition from the inhabitants of the ward of Walbrook in favour of the preservation of an open space of the piece of ground on the western side of the Mansion-house also a similar petition from the president, council, and members of the Royal Institute of British Architects, who expressed a hope that the corporation would contribute a reasonable share of the expense of effecting this improvement. The value of the land was estimated at 180,000l. The petitions were finally referred to the Improvements Committee.

Funie in a Theatre.—During the performance at the Exeter Theatre last week, two men commenced to fight in the pit, and the confusion which prevailed a cry of fire was raised. The building was densely crowded at the time. The audience in the pit jumped on to the stage, and a regular panic ensued. The officials and the more orderly portion of the audience, however, by strenuous exertion, ultimately succeeded in restoring order.

Royal Scottish Academy.—On the 10th inst., at a general meeting of the Royal Scottish Academy: Mr. W. McTaggart and Mr. J. Dick Fiddie were elected Royal Scottish Academicians.

Strike in the Building Trades.—On a proposal by Messrs. Aldin, building contractors, of both Kensington, to reduce their wages from 8d. to 7½d. per hour, the plasterers struck work, and declared the firm closed to the trade.

Newspaper Press Fund.—The half-yearly meeting of members of this fund was held at the offices, Cecil-street, Strand, on Saturday, the 12th inst., Mr. Godwin in the chair. The report of the committee for the half-year ending 31st December last stated that the institution is progressing satisfactorily, although it is necessary to reiterate the expression of regret, contained in the last report, that the number of members remains stationary. The roll-book of the society shows an aggregate of 238 members, of whom 167 are resident in London and its suburbs, and 71 in the provinces. Four members have died within the year, two of whom resided in London, and two in the country. To the widows of the latter liberal grants have been made. The grants, by way of relief, for the past half-year, amount to 771, and for the whole year just elapsed to 1471; the cases relieved being six in number. During the half-year the sum of 600l. has been invested in the purchase of 6771. 8s. 5d. in the New Three Per Cents. The ordinary income of the fund for the year may be thus stated:—Divided on 600l. Eastern Bengal Railway stock, 29l. 6s. 8d., divided on 700l. Great Indian Peninsula debentures, 34l. 3s. 9d.; interest on 3,900l. New Three Per Cents, 101l. 9s. 7d.; from members' annual subscriptions, 162l. 18s.; from annual donations, 46l. 3s.; total, 374l. 0s. 7d. The total amount of receipts from all sources in the same period was 1,152l., and the expenses of administration, including salary, rent, office expenses, stationery and printing, postage, advertising, and cost of getting up the annual dinner, amounted to about 300l. Mr. Monid moved, and Mr. Charley, M.P., seconded, the adoption of the report. The chairman inquired what steps had been taken with reference to the plate recently engraved by Mr. T. Vernon from Marill's picture of "The Pool of Bethesda" in the possession of Colonel Tomline, M.P., and which that gentleman had presented to the fund. The secretary, Mr. Tanton, stated that measures were being taken for the legal acquisition of the copyright by the trustees with the view of issuing the engraving to the public for the benefit of the fund.

The Burying-place of Abraham.—At a late sitting of the Berlin Archaeological Society, Captain de Jassmond, the personal adjutant of the Crown Prince, gave an interesting account of a visit paid by his royal highness to the sepulchre of the Patriarchs, at Hebron, during his late journey to the East. The Crown Prince offered 100 napoleons for the necessary permission to enter the accredited tomb of Abraham, which no one had heretofore been allowed to enter. The Turks promised to admit the travellers on the following night, but it was unfortunately impossible for his royal highness to delay his journey so long. In the meantime, the Crown Prince and Captain de Jassmond gazed for a long time into the interior of the cave, through an opening 10 in. in diameter, until their eyes became accustomed to the flickering of the lamps with which it is lighted, and they were able to distinguish the form of the cavity. It is about 40 square feet in extent. The floor, which was strewn with written prayers cast in from above, had evidently been artificially smoothed. The whole space was empty, but at the further end an opening closed by a latticed door, seemed to lead to the inner cave. No masonry was visible on the walls, and there was no sign of the fifteen steps and the pulpit which, according both to Rabbinical and Arabian accounts, are to be found in the sepulchre.

The Holborn Valley Improvements: Presentation to Deputy Fry.—A service of plate, worth 500 guineas, has been presented to Deputy Fry by the Court of Common Council as a mark of its high appreciation of his services as deputy chairman of the Improvement Committee throughout the erection of the Holborn Valley Improvement Works.

Royal Gold Medal of Architecture.—The Council of the Institute of Architects have nominated Mr. Benjamin Ferrey, F.S.A., Fellow, for the award of the Royal Gold Medal of 1869-70, subject to the approval of a special general meeting and to her Majesty's gracious sanction.

Somersetshire Archaeological Society.—Subscribers are being sought to place a memorial of the late Rev. F. Warre, a much valued officer of the society, in the parish church of Bishop's Lydeard. A monumental brass is proposed.

Training Ship for Poor Boys.—The Admiralty have consented to place at the disposal of the Board of management of the Forest Gate District Schools, the *Delia*, one of the vessels now laid up at Sheerness, as a training ship for pauper boys. The Admiralty will fit up the vessel for 500 boys on the managers agreeing to pay 5,407l. The training-ship will be moored off Northfleet.

Architecture at the Royal Academy.—A special general meeting of the Institute of Architects will be held on Monday, the 21st of February, to consider the subject of a recent letter from Mr. B. Smirke, R.A., concerning the accommodation provided for architectural designs and drawings at the Royal Academy Exhibition.

Deptford Dockyard.—It is stated that Mr. Anstie, an American millionaire, and a representative of an eminent shipbuilding firm, has agreed to purchase Deptford Dockyard for 140,000l.

TENDERS.

For the erection of County Court and offices at Gainsborough, Mr. H. G. Seely, architect. Quantities supplied by Mr. John Scott:—

Ridal	£2,147 0 0
Nicholson	3,907 0 0
Claude & Co.	3,736 0 0
Dennett & Co.	3,674 0 0
Barwell	3,469 0 0
Johnson	3,260 10 0

For semi-detached residence at Rehampton, Surrey, for the Right Hon. Earl Spencer. Messrs. Beeson, Son, & Burnett, architects. Quantities supplied by Mr. James Burnett:—

Parsons & Townsend	£1,189 0 0
Brace & Son	1,136 0 0
Easton, Bros.	1,446 0 0
Adamson & Son	907 0 0
Wignam	963 10 0
Avis & Co.	969 0 0

For two detached residences, for Mr. R. Orerton, Victoria Park, Leicester. Mr. J. Goddard, architect. Quantities supplied:—

Duxbury	£2,790 10 0
Fish & Son	2,786 0 0
Steele & Son	2,730 15 0
Osborne, Bros.	2,640 0 0
Herberts (accepted)	2,600 0 0
Ferkins	2,600 0 0

For finishing houses on the Full-hill Estate, Bristol. Mr. W. Giestman, architect:—

No. 1.	
Millett	£251 0 0
Polly	240 0 0
Cleave	312 0 0
Lloyd	310 0 0
Harding	310 0 0
Hill	302 5 0
Stephens	297 0 0
Hook	289 0 0
Leach	284 0 0
Perkins & White	281 10 0
Hobbs (accepted)	268 0 0

No. 2.	
Millett	£270 0 0
Perkins & White	193 17 0
Leach	171 0 0
Hill	172 3 0
Hammond	170 0 0
Lloyd	160 0 0
Stephens	157 8 0
Hobbs (accepted)	149 15 0
Hook	149 0 0
Hewell	146 10 0
Harding	100 5 0

For seven houses in Har-street. Messrs. Reddall & Camber, architects:—

Myers	£4,174 0 0
Carter & Son	3,966 0 0
Pritchard	3,604 0 0
Kiddle	3,432 0 0
Haslewell	3,465 0 0
Langston	3,360 0 0
Ashby & Son	3,160 0 0
Brown & Mohr	3,160 0 0
Higgs	3,161 0 0
Easton & Chapman	3,123 0 0

For rebuilding four houses, Bell-street, Marylebone, for Mr. Barr, Curia & Co., Fishbury. Messrs. J. & R. A. Bell, architects. Quantities supplied:—

Rob & Sons	£1,927 0 0
Wilson	1,911 0 0
Goodman	1,911 0 0
Merrin	1,910 0 0
Blackmore & Morley	1,864 0 0
Hockley	1,842 0 0
McLachlan	1,830 0 0
Wignam	1,745 0 0
Brown & Son	1,740 0 0
Kelly, Bros.	1,737 0 0
Servier & White	1,684 0 0

For repairs and building an additional kitchen to the Bath-street Temporary Infirmary. Mr. H. Saxon Snell, architect:—

East & Brown	£406 10 0
Patman & Fotheringham	391 0 0
Briggs & Sutball	426 0 0
Sailey & Son	426 0 0
Kenor	426 0 0
Ferry, Bros.	427 0 0
Fettes	366 10 0

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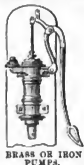
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The trap is attached by a hinge with brass connections; it has also the important advantage of preventing the pipes from becoming stopped.

Size. 4 in. 5 in. 6 in.
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Large sizes in proportion.

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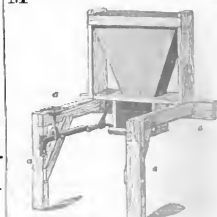
In an advertisement, D. & W. have determined to introduce the selected pattern of their REGISTERED PATENT STONEWARE CLOSET-FANS, at the price of the common description of northern

Experiments have shown that this shape is the most simple and efficient, and that its strength, durability, and cleanliness is not surpassed by the most expensive closets.



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DESIGNS for CLOSETS and PLANS for FIXING the APPARATUS may be had of
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FIFTH, &c.—Notice is hereby most respectfully given that it is LONDON DEPOT for this Water is REMOVED to No. 31, West End, Manchester-street Road, City-road, Bala, N. Bally, that the trade term, "TERRO-METALLIC" is the correct name of the Preparation; and Bally, that the "Reports of the Journal," page 381, of the Great Exhibition, 1867, note the grant of a Protection Medal, and mark it as a Manufacture known as long as "The Tiles." Vertical, Saddle-shaped, or the end of the Bedstone on application at Works.

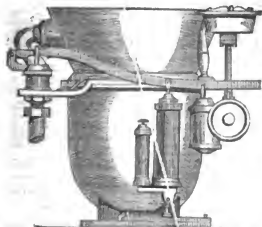
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ELEVATION OF CLOSET, WITH REGULATOR ATTACHED.

THE BEST AND CHEAPEST IN EXISTENCE.
THE PATENT "UNIVERSAL" BRASS REGULATOR contains all the advantages of the best Regulators of the day, including

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Together with the following additional advantages, viz.:-

It is **MUCH** the CHEAPEST.

The Oil required for LUBRICATING the PISTON can be applied by merely unscrewing the top of the small Oil-chamber, without at all interfering with the Regulator.

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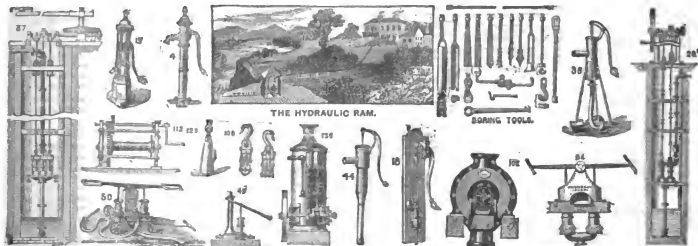
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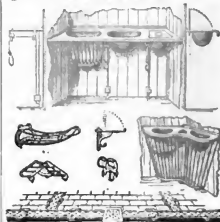
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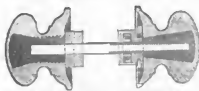
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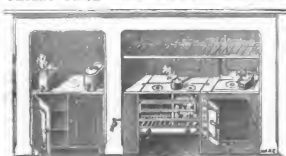


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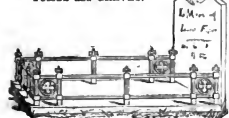
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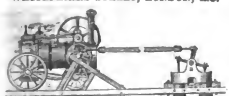
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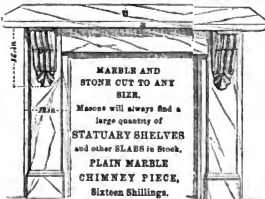
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VOL. XXVIII.—No. 1412.

A Recent Peep at the Great Pyramid.



For the seven antique wonders of the world one only is still extant. The Pharos of Alexandria no longer sheds its light over the waters of the Mediterranean; Apollo Colossus has long since gone to the melting-pot; the cryo-elephantine Olympian Zeus of Phidias has been turned into annulets and squared into dices; jackals labour the ground where once stood the terraced gardens of Babylon—the paradise of Nebuchadnezzar. The Temple of the Ephesian Artemis is sunk for ever in the marmes of the Cæstus; the doctored monarch Manolus has taken refuge

in England, and from his pedestal in the British Museum placidly looks down upon the remains of his celebrated sepulchre—a monument of departed greatness. But the Pyramid of Cheops still stands erect on the western bank of the Nile. The storms of forty or more centuries have but chafed its surface; and though the palaces of Cairo have been partly built out of the stones of its retirement, yet it remains apparently uninjured, and is likely to remain to the end of time. Climate, no doubt, has had much to do with its wonderful state of preservation. Had it been built in a country with cold and damp atmosphere, the moisture would have penetrated between the joints, and the frosts and thaws split and riven its enormous courses of stone, as in northern climes they rive the granite mountains; but in Egypt, where literally there is no rain, no damp, no frost, Time has not these allies to help him in his work of destruction.

Such an ancient monument as this, which existed before Abraham went down into Egypt, has been necessarily described by many writers. We have in our possession a book, called "Les Plantes des Villes," published in 1573, which contains a medley of good things. Poets, "the city of Peru," and the Pyramids are all therein described and illustrated, and we borrow from it a list of the writers of antiquity who have touched upon the pyramid, viz.—Herodotus, Darius of Samos, Aristogoras, Dionysius, Artemidorus, Alexander Polyhistor, Botrodes, Antisthenes, Demetrius, Democles, and Apollonius; and we are also informed that Thales, of Miletus, obtained its height by measuring its shadow at the proper moment. Herodotus, perhaps, gives the most com-

plete account. He tells us that the Pyramid of Cheops was built in twenty years by 100,000 men; that they commenced by constructing a road from the Nile, of polished slabs of stone, ornamented with figures, for the transport of the stones. He mentions a canal formed by Cheops, in the midst of which was an island and a chamber, and he describes also the manner in which the outer covering (which was smooth) was laid. He says that upon the steps (those formed by the courses) were raised machines of timber, evidently including inclined planes,—by means of which the huge stones of the casing, 30 ft. in size (they were triangular), were raised step by step to the summit, which was completed first, and the work continued downwards to the basement, this being evidently the only manner in which the work could be accomplished. In addition to these ancient writers, we have had in more modern times dissertations by Le Brun, Grotius, Junius, Meisler, Hirt, De Saey, Langlois, Belzoni, Lepsius, Howard Vyse, and, though last not least, Piazzi Smith, who has compassed and spanned every stone, so to speak, of the Great Pyramid, and written an exhaustive book upon the subject, to which we beg to refer every one who wishes to study it in a serious manner.

Our object is simply to describe the impression made upon ourselves during a day's visit to it, in the belief that however frequently it has been spoken of, and however often it has been visited, a vast structure somewhat about the size of Lincoln's-Inn-Fields at its base, and somewhat higher than the cross of St. Paul's, which existed when the world was in its cradle, and will in all probability accompany it to its tomb, can never be considered commonplace, hackneyed, and uninteresting.

We left our hotel in the Esbekiah, Cairo, in a carriage before daybreak, accompanied by two Americans, who had joined us at Jaffa,—a fat doctor and small minister. Half an hour's drive brought us to the banks of the swollen Nile at Old Cairo. Here the donkeys and their drivers, who had been employed by our dragoman, joined us, and we embarked in a caïque at a spot which some have called Charon's Ferry, possibly because, in the time of old Egypt, bodies were here embarked on their way to the necropolis. Our Charon did not, however, bid us "trim the boat and keep quiet," but he himself was trimmed and kept quiet by our dragoman, for, as he demanded more than his obolus, our man felled him like an ox. He then arose, shook himself, and became a wiser if not a better man. In this we obtained a striking confirmation of the sad truth which we had learnt in our previous dealings with Orientals, which was, that if you wish to gale your point with either piasha or peasant, you must prostrate him, morally first, and then demand the favour of his compliance with your request that he will do his duty or perform his contract. On board the caïque, in close companionship with us, were our favourites, Ginger Pop and Yankee Doodle; the former was a white donkey, of sturdy build, very like the one that figures in a picture by Gerome which will occur to the recollection of some of our readers. He derived his name from the fact that as he had made the pilgrimage to Mecca he had received the distinctive badge of a hajdi, by having his mane and tail dyed with saffron, till they were the colour of ginger. He fell to our lot, and we mounted him on reaching the opposite bank with a certain degree of pleasure, for we knew by experience that he was a trustworthy steed. Yankee Doodle fell to the lot of the fat doctor, who to revenge himself upon those who had named his beast, beguiled the way by persuading his driver that his donkey would never be in want of a rider if he changed its name to Lord Dundreary; and by the time he reached the Pyramids, by dint of constant repetition, the boy had got the same pat.

Our ride was a pleasant one, not in a straight

line to the Pyramids, which we saw always before us, but, as the waters were out, by various turnings and windings on dykes and causeways, which, in the time of the inundation, served as the roads of communication between the various villages that crowned the summits of mounds rising out of the water on both sides of us. Each mound had its grove of date-palms; its group of white flat-topped houses; its crowd of fellahs, of fellah women in blue smocks and black nose-bags, called veils; and its naked children—like animated bronze figures, with the delicately moulded forms peculiar to the dark-skinned races—sporting in and out of the shallow water, evidences of the exuberant life with which the Delta and that part of Egypt swarm.

After passing many of these picturesque cases, by about noon we began to ascend to the rocky platform on which the Pyramids are situated. Before we had reached it, a swarm of swarthy Arabs swooped down upon us, yelling and gesticulating, and seized our bridles. After recovering from our first surprise, we were reassured by finding that, though their manners were rude, their language was refined. To be accosted in our mother-tongue, spoken with a perfect accent, by a troop of dirty savages, was something novel for the lower class of Levantines, who, when they do speak a little English, generally interlard their discourse with expressions which they have picked up from sailors,—not exactly pleasing to ears polite. These men, on the contrary, had gathered their vocabulary from the hundreds of educated men who had visited the Pyramids on their way to or from India. Hence the amusing contrast. Still, however satisfactory their accent, it was not agreeable to be accosted by half a dozen pairs of unwashed hands. So there were loud calls for the Scheik, who, after preliminary conversation, by dint of loud persuasion, combined with force, prevailed upon his followers to leave us unmolested to choose our own guides.

We have mentioned hitherto but one pyramid, that of Cheops, as it is the largest and best-preserved of all; but pyramids of all sizes are to be found at intervals on the borders of the Nile, between the Delta and Fayoum, and always on the western bank only. Lepsius visited sixty-seven within a distance of thirty-six miles. At Ghizah there are three large ones, and the remains of six diminutive ones at their feet. It has been affirmed, to account for these different sizes, that each monarch began to build his tomb as soon as he ascended the throne, and that he added a course or two to the exterior every year of his reign, and that in this manner the size of the pyramid is an evidence of the length of the reign of the monarch who built it; but this could hardly have been the case, for Cheops reigned sixty-three years, while Herodotus, who must have gained his information from the traditions of the priests, asserts that his pyramid was built in twenty years.

Besides those of Ghizah, there are groups of pyramids at Sakkarah, Abousouel, Abousir, Dabous, Matanyeh, and Meidoun. All are on the same plan, with an internal chamber for sepulture, the entrance to which has been concealed by the external masonry, and all are to a more ruinous state than those which we saw at Ghizah.

During our approach to the Pyramids from the Nile they grew so gradually upon our sight that we could hardly realise their vast dimensions until we got near enough to see some individuals belonging to a party which had preceded us descending at one of the angles, in proportion to the mass like mites to a Cheshire cheese. Leaving our donkeys in the shade, we hurried to one of the angles, where the ascent is easier than elsewhere, and commenced our pilgrimage to the summit. Two Arab guides are allotted to a man, and three to a lady; they keep hold of your hands, and by dint of hauling and

Such considerations are, we imagine, sufficient to show the eligibility, even the necessity, for a separate exhibition of architectural drawings, where these initiatory representations of architectural design can be viewed and studied upon their own proper basis, apart from the distracting influence of works of art of a wholly different nature. And there is probably scarcely any architect of talent or eminence, in town or country, who, if the question were directly put to him, "Do you consider an architectural exhibition necessary or desirable?" would not immediately answer in the affirmative. One provincial society, that of Liverpool, has already, as our readers will have seen in our last number, expressed its opinion decisively on this head, in a resolution passed at a general meeting of the members; and assuming, as we think we may do, the existence of this general approval of the scheme, it is somewhat surprising that the Exhibition Society should be suffered to be now, after a career of some years, in a position to feel compelled to solicit the support which it might have been thought the architectural profession at large would before now have thought it their interest to give to them. That this is so is, perhaps, partly traceable to a certain laziness and "save-trouble" feeling among individuals of the profession. A would be glad enough to hear that there was a good exhibition, but he cannot be troubled to pick up and send off drawings for it, still less to make a drawing on purpose to exhibit: he thinks B, who got that town-hall competition, ought to send up something; but he has not time himself to think about it. We have heard exactly this said more than once; and if the object were to fill the walls with designs for very large and grand works, this would be a valid objection; for few architects have the luck to get a really grand commission to carry out.

But we want to know how small things are getting built, and how they should be built, as well as large ones; and a design for an ordinary dwelling-house, which shows originality and refinement in plan and conception, is more valuable than one which, although possibly presenting a perspective view of a town-hall where these qualities are absent. It is the basis of the system of architectural competitions that architects get, through them, into a habit of only wishing to astonish spectators by diet of mere bigness and splashiness of drawing. An exhibition where the chief critics would be professional men who can see into the real worth of a design, and are not to be taken in by draughtsman's dodges, ought to be a great corrective against this evil. It is to be feared, however, that the reason why many who might contribute to the architectural exhibition do not, is, that it does not "pay;" that the drawings are not sufficiently known and seen by the public; and that, in fact, the exhibitions cannot trace out commissions as a reward for the display of their works in the room in Conduit-street. This, if a somewhat narrow, is still not an unnatural feeling; and it is certainly to be regretted that the architectural exhibition has attracted so little public notice generally, on the part of those not directly connected with the profession. The very great ignorance of even educated people as to what constitutes architecture as an art, and their consequent want of interest in and comprehension of the drawings which illustrate it, is, of course, mainly the cause of this indifference; and it will take a long time, and a much better system of art education in our schools, to do away with this stumbling-block.

However this may be, we do not think that in the meantime the architectural profession of England ought to allow the exhibition to drop, because the general public do not show so much interest as they might (and, we may add, ought) to show in it. Taking a serious view of the profession of architecture, involving the solution of many difficult problems, artistic and practical, which concern the beauty and well-being of our towns and villages, so great is the advantage and instruction to be gained by architects from a knowledge and study of the works of their contemporaries, at home and abroad, and from knowing in general what is going down and what is coming up in their profession, that it is worth while to make a stand for an exhibition which will give us these advantages; and this the Architectural Exhibition may certainly be if it is generally attended and contributed to as it should be. In the present state of public non-interest in architecture, it is, indeed, next to impossible that such an exhibition should be

self-supporting, and, perhaps, this is the most difficult part of the matter; "the penny-few will be a hard chapter, we doubt." But if even one-fourth of the architects in this country would make up their minds to subscribe something towards the necessary expense of keeping up the Exhibition, the amount requisite from each for this purpose would, probably, be something quite trifling, and of scarcely any account at all in comparison with the importance of the object. One word may be added as to what ought to be the nature of the drawings to be exhibited. It is not entirely without cause that we have been twitted by some French critics with caring for nothing in our architectural drawings but the making of pretty pictures. It may be said that this is the only form in which non-professional people care to look at an architectural drawing at all. The sooner they are taught differently, then, the better. But the exhibition will not, at all events for the present, be for non-professional visitors, but mainly for architects. Let it then be made such an exhibition as architects can really visit with advantage, and derive some instruction from with regard to each other's mode of working. Small perspective sketches are all very well, if honestly done, to show the architect's idea of what his building should look like in execution. But the magnificent views and vistas which confound the minds of competitive committees are out of place in a professional exhibition. We know they are all humming, and it may be necessary to indulge in a little of this sometimes to please clients; but there is no reason why we should flourish it in each other's faces. What we want are drawings and plans which will enable us to trace out the whole working of a design, and especially large-sized and careful drawings of portions of a building, whenever anything special, either constructive or artistic, has been attempted, would often be very valuable for study, especially by young students. Let us be assured of an exhibition, in short, that will be of real value to professional visitors, and we trust there will be found among the architectural profession of this country sufficient spirit and courage and love of their art to induce them to give it a cordial and substantial support.

CLAUSES IN THE IRISH LAND BILL OF INTEREST TO THE BUILDER.

It does not fall within the scope of our columns to enter into any general discussion of that extensive and complex measure, the main features of which were laid before the House of Commons on the 15th inst. Dealing, as it purports to do, with the main question of the tenure of land in Ireland, its probable advantages or disadvantages involve many considerations that are foreign to our pages. But the one point which our readers may naturally expect that we shall not be altogether silent, and that is the probable and purposed effect of the Act, should it become law, on the operations of the builder.

The proposed provisions of the measure, in this respect, are capable of ready and distinct definition. It is a common practice in Ireland—and Mr. Gladstone expressed the surprise that he felt on becoming aware of the fact—although not in England, to value the buildings on a farm apart from the farm itself. That practice increases the facility with which any improvements made by a tenant in the form of permanent buildings, can be estimated. It is the intent of the measure to increase the security of the occupier of the land, and to render difficult and costly evictions on the part of the landlord, except in case of non-payment of rent. Certain rules of compensation for such evictions are laid down; but, in any case, it is proposed to recognise the right of an outgoing tenant to payment for permanent buildings erected by him, if they are applicable to agricultural purposes, and if they are such as to improve the letting value of the property. It is necessary that such additions to the holding should be suitable for the purposes of agriculture, as, otherwise, they would not come within the scope of the tenancy. Thus a case was cited in which the tenant of a farm abutting on the sea-shore built a bathing-house, and claimed to be paid for it as an improvement. Such an outlay would not come within the provisions of the present Bill. It is quite clear that it would be unjust to saddle the landlord with a payment for any building which was altogether apart from the terms of the contract for occupancy, and which,

although serviceable to one occupier, might prove useless to another.

The onus of proof as to the authorship of such structural improvements—to which the Bill proposes to assimilate the case of the reclamation of land—is thrown upon the landlord. There is to say, if the tenant claim to have erected a certain building, it is for the landlord, if he disputes the claim, to show that it has not been erected by the tenant. On the one hand, of course, the building will be to the fore to prove its own existence. On the other hand, it is presumed that the landlord will have, or ought to have, proper plans and surveys of the estate, which he can produce with all necessary books and records, so as to show that the improvements which the tenant claims to have effected were in existence at a date prior to his claim.

It is further provided that respect must be had to any advantages already derived by the tenant from improvements which he has effected on his building. It is not easy to see how this provision applies to the case of permanent buildings erected by the tenant at his own cost. If his rent has been raised in consequence of such improvements effected by him, he will have paid twice for them, once in the interest of the money laid out, and once in the increased rent. The opposite case, of an abatement being made in rent, in consideration of cottages and gardens, is proposed to allow of such sub-division for the use of servants employed upon the farm, or for agricultural purposes. Into the general question of the policy of the case we cannot enter. It is, undoubtedly, proposed to limit, or rather to circumscribe, certain rights which the owners of land have hitherto considered to attach to proprietorship. It is not, however, proposed that a limitation would be a positive grievance to the proprietors. In a merely financial point of view it is possible that it may be to their advantage.

But it is clear that the tendency of this portion of the measure would be to encourage domestic building in Ireland. A tenant would often be disposed to make substantial improvements in his holding, if once he had the assurance that the money he thus laid out, so far from giving the landlord a firmer hold on his rental, would not, in any case, be absolutely lost to the family of the improver. The tendency would be good in two ways. It would lead to the erection of convenient buildings, which otherwise would be deferred or avoided, and it would lead to the more workmanlike and permanent character of the buildings so erected, as a tenant, for the most part, rich in excellent building materials, the hope of compensation would favour the transformation of the straw-thatched, clay-built hut, into the neat stone-built cottage or outhouse. The transformation which the last twenty-five years have effected in many English country villages is marvellous. Neat cottages, often with architectural pretensions of no mean order, are to be found replacing the old huts, partly timber-built, partly plaster, partly rubbish of any description, with windows the size of pigeon-holes, thatched roofs, and no means of ventilation, and which look so picturesque in pencil sketches. Those who are familiar with Ireland will know how much room exists for improvement in this respect. Our own experience is not such as to make us anxious as to the rapid effect of legislation, even supposing it to be guided by as much wisdom as is competent to parliamentary legislators, in changing the long-formed habits of a race. Still, it is one thing to strive to enlist human nature on the side of progress, and another thing to ignore its well-known motives. In proposing to give the builder compensation for the work of his hands we trace at least a possible rudiment of increasing civilisation.

The rental of Ireland, it is well here to place on record, was estimated in 1779 at 6,000,000l.; in 1809 it is returned at 12,000,000l. The rental of England in 1771 was estimated at 16,000,000l.; in 1809 it is returned at 48,000,000l. The rental of Scotland in 1770 was stated at 1,500,000l.; in 1809 at 7,200,000l. Thus, during the same period of time, speaking in round numbers, rents have doubled in Ireland, trebled in England, and sextupled in Scotland, the term selected being that

of ninety years. It will be a matter of interest to compare the increase of population, and the augmentation in the size of the capitals and great cities of manufacturing and commercial industry, with this increase in rent. The rate of increase of London, for instance, is known: it doubles in a little less than forty years. On the other hand, the constant decrease in the value of money, which has been so much accelerated since the discovery of the Californian and Australian gold-fields, has to be set off against the nominal increase in rental. The subject is one on which the materials for exact comparison have yet, to some extent, to be collected. It is closely connected with the question of the improvement of the habitable nature of the country, the sanitary, civilising, and æsthetic progress of domestic architecture.

We have confined ourselves to an examination of that portion of the Bill now before Parliament which distinctly interests the architect and the builder. But a lesson is involved in the statement incidentally made by the First Lord of the Treasury in introducing this important measure, of which we ought not to lose sight. We have, not unfrequently, had occasion to warn our readers against the exaggerated and pedantic application of rules which, while sound up to a certain point, afterwards become fallacious, and are relied on as main and normal laws of social conduct. Human nature is more complex, as well as more noble, than either the pencil or the multiplication table; and no error can be more lamentable than that which leads to the attempt to weigh all human nature in the partial and restricted balance of finance. The correlation of supply and demand is an important truth, and one which can not be neglected without producing certain and appreciable evils. We are even now smarting from the neglect of this law in the premature construction of railways, which were supplied, for the benefit of the individuals interested in their construction, in the absence of any such real demand on the part of the public as might justify the outlay.

But to attempt to supply this rule as adequate to meet all the exigencies of a complex state of civilisation is a miserable and mischievous pendency. It is this fact which is so distinctly illustrated by the Irish returns quoted by Mr. Gladstone. It is undeniable that one main cause of the Irish trouble is the fact that cultivation of the island is almost the sole national industry; if, indeed, it is allowable to use the word. With the exception of parts of Ulster, almost the whole support of the Irish people is derived from agriculture or pasture. The mining, metallurgic, textile, commercial, and other occupations which are carried on by so large a proportion of the population of Great Britain, are, in Ireland, chiefly conspicuous by their absence. The out-field of the potato-ground, which is almost the sole resource of the great majority of five millions and a half of Irishmen. It results from this fact that the competition for land is keen. Independently of the strong passion for the native soil, which forms a predominant feature of the Irish character, land has a value in the eyes of the ordinary Irishman far greater than in the case with the Englishman on the same social level. In fact, the occupancy of land is, for the most part, the sole means by which the former exists.

Demand for land, therefore, is at a maximum in Ireland, as compared with England. Supply, on the other hand, is limited and fixed. On the principles of political economy, therefore, the price of land,—that is to say, rent,—ought to increase in Ireland in a ratio far greater than in the case in Great Britain. And with this increasing rental every inducement to the economical, industrial, remunerative use and culture of land must, theoretically, concur. In some parts of the world we know such to be the case. We may cite China as an instance. There the ratio of population to land is very large, and there the almost ingenuously industrious are exercised to obtain the largest returns from the coveted soil.

The facts quoted by Mr. Gladstone, however, are at total variance with a theory which must be true if the rules of political economy were those which regulated human action. The case of Ireland is absolutely the reverse of that which ought to prevail, did the correlation of supply and demand settle all social questions by a self-acting influence. During the period which has witnessed the tripling of the rental of England, and the six-fold multiplication of that of Scotland, that of Ireland has only doubled. The rich stream of productive industry which

has been turned into so many channels among ourselves has indirectly increased the value of landed property. The mere fact that land was in demand has altogether failed either to enhance its price or to improve its culture, to an extent at all comparable with the result of what may be called the contagion of industry.

The actual ratio of land under corn crops per head of population does not differ very sensibly in the three kingdoms. In Scotland the proportion is 2.81 mouths per acre; in England 2.61 mouths per acre, and in Ireland 2.56 mouths per acre.

But the proportion of sustenance derived from the potato is far larger in the latter country, where a million of acres are devoted to the culture of this root. The actual facts are highly instructive.

England contains 32,690,397 statute acres, of which 22,261,833 were under cultivation in the year 1866, a third being under corn crops. The population in that year was 11,461,217.

Scotland contains 19,939,377 statute acres, of which 4,158,360 were under cultivation in the year 1866, about a third being under corn crops. The population in that year was 2,153,413.

Ireland contains 20,322,641 statute acres, of which 15,549,796 were under cultivation in the year 1866, less than one-seventh of which were under corn crops, two-thirds being 3.6 acres of which nearly 2.8 were cultivated per head.

In England, therefore, there existed 2.8 acres of land, of which 2.00 acres were cultivated for every soul of the population. In Scotland there existed more than 6 acres for every individual, although only about 1.4 acre per head was under cultivation. In Ireland there were 3.6 acres of which nearly 2.8 were cultivated per head. It must be stated, however, that in the case of Ireland, the hill pastures are included in the returns, which is not the case in the English statement. Half of the land cultivated in England is devoted either to grass crops or to permanent pasture. In Ireland 11½ millions of acres out of 18½ millions are pasture and grass crops. Thus, while the English population cultivates about an acre per head for corn, green crops, and fallow, the Irish population cultivates only about two-thirds of an acre per head for these purposes, while about one-fourth of the area of the island lies permanently waste.

The above figures are ample to show that those who endeavour to account for human action on the simple principles which regulate purchase and sale, or supply and demand, take a view of a large subject so inadequate as to be properly designated as puerile. While the Irishman, who depends solely on land, has a third less land, for every mouth, to cultivate than has the Englishman, who leans on so many other industries for support, the return which he wins from his culture, measured by acres per acre per head of rent, is as two to three when compared to the English rental return. The comparison with Scotland is even more striking. The climate of that kingdom is more severe than that of Ireland. With the exception of the valley of the Clyde, the aid to be derived from her agricultural industry is not to be compared with that afforded by the great mineral wealth of England. But the high moral character of the Scotsman, his patient forethought and untiring industry, are made evident by proof stronger than any words that we can employ. While cultivating less than a fourth part of the area of his mountainous country, a breadth of land which is, as in the case of England, about equally divided between pasture, whether permanent or annual, and tillage, he thereby secures for human support the same area per head as does the Irishman. Yet the results of his industrial toil, in the course of nine-tenths of a century, as measured by the increased value of the rental, is just threefold that which has been attained in the more favourable climate from the more fertile soil of the Emerald Isle.

It is undeniable that moral causes must have no small influence in producing such various results of national action. To neglect or ignore the genius of a people, or of a race, is as unphilosophical as to neglect the conditions of soil or of climate. And the error is not one of theory alone. Were it so, we should find little disposition to discuss it. It enters into the very life of a people. It influences the course of legislation, no less than that of administration. Mr. Gladstone prefaced his motion by the discouraging doubt whether the main features of legislation for Ireland since 1793 had not tended rather to injure than to improve the condition of the Irish people. He admitted the existence,

under identical laws, of a state of custom and habit so different in the two kingdoms as to amount to disparity of law. The gist and upshot of the whole matter is, that it is not legislation to which we must look for the sole, or even the main, source of improvement. Laws, in their operation, if not in their origin, are the reflection of national character. Let law be amended, if reason demand it; but let us not expect, from any alteration in the statute-book, that national progress will be the result, or that law bears little more than a negative relation. We may remove injustice; we may remove obstacles to agriculture, to industry, to commerce; but such removal is only a part, and a small part, of that which we have to do. The formation of truthful, honest, industrious, habits; the inculcation of mutual respect and forbearance between class and class, as well as between individual and individual; the engrafting of a large and catholic tolerance for all honest opinion; the spread of that knowledge, social and technical in the first instance, although rising to higher branches of culture by its own innate force and truth—these are the matters for which it behooves us to labour, and these alone are the means to make the desert blossom as the rose.

On comparing the amount of rental stated by Mr. Gladstone with the details of agricultural statistics from which we have ourselves made the foregoing extracts, it appears that the average rent of cultivated land in England is about 21. 2s. per acre; in Scotland, 11. 14s. per acre; and in Ireland, 16s. per acre. This comparison fully bears out the tendency of our foregoing remarks.

PROFESSOR SCOTT ON ARCHITECTURE AT THE ROYAL ACADEMY.

LECTURE I.

WHEN I delivered my last lectures in this Academy, it was my intention to give a practical sketch of the history and development of architecture in this country from the earliest rise of civilisation among the races of which our nation is composed, down, perhaps, to the period of the revival of Classic architecture. As, however, such continuous history has been disturbed by the omission of my lectures last season, and as few now present heard, and fewer, probably, now remember those lectures, it is not my intention to continue my former course, but, adopting as my stand-point the stage at which I had then arrived, to digress into an inquiry into some of the practical and artistic principles of the class of architecture of whose development I was then treating.

The chronological point which I had reached was the close of the eleventh century,—a point well fitted to be chosen as one for entering the beaten track for the purpose of inquiring into principles. It was the very stage at which the great round-arched style, which had just developed itself into a strong and sturdy assurance, was in the condition best suited to receive the refinements of art.

It was, too, the very eve of that wonderful politico-religious movement which was bringing the nations of the West into contact with the East,—thus preparing the way for a vast influx of new ideas and of fresh artistic elements; and, so far as our own country was concerned, it was just the moment when the simple and unambitious architecture of the Anglo-Saxon race had given place to the more colossal edifices and the more systematic style of the Norman invaders; a style which, in its own character, was ready to become naturalised as our own, and to be pressed forward in all zeal and earnestness by the native races which—now neither Saxon nor Norman—were becoming, to all intents and purposes, English.

Nor let it be supposed that the architecture, thus made ready as the nucleus of subsequent development, was in itself essentially rude, or mean, or barbaric. I admit that it was stern and severe, and lacking the refinements of advanced art; and that its sculpture, though a reflection from that of Byzantium, as that had been from ancient Greece,—was nevertheless grim, uncouth, and unrefined; yet in grandeur of conception and in vastness of scale its productions were in itself essentially noble, or, at least, I shall be able to show, that it contained principles the most profound and accurate, and capable of being carried forward to any degree of refinement.

A single half-century had in fact filled the

length and breadth of our land with structures of prodigious scale and impressive grandeur; founded on the most reasonable principles, and containing, in a rough and overwrought form, the most profile and the most artistic elements. So many of these vast edifices have given place to others of more advanced style, or have been recklessly destroyed, that we can now with difficulty realise the architectural states of a country where they were rising or were just completed in every town and (on a reduced scale) in almost every village—a period when vast fortresses, such as the Tower of London and the stupendous keeps of Rochester, of Norwich, and of Lincolnham were specimens of the vernacular architecture to be seen all over the land; when the now shattered ruins of Newark and the grim tower of Navestock were as freshly erected as their names imply; when the awful names of Durham and Gloucester were but specimens of the "new manner of building" then recently introduced, and which pervaded the whole land; and when no city, or hardly a village, could be approached without the lofty scaffolding bearing first into view which surrounded camps which could boast such as those at St. Alban's and Tewkesbury as their types.

We will, however, quit the track of mere history, to inquire into the intrinsic principles of the architecture then first attained, and in course of development; and I must beg to be forgiven if, in doing so, I am compelled to repeat a good deal of what I had brought under your notice in former lectures; for, not then intending to go systematically into this inquiry, I had forestalled my subject by adverting to these principles from time to time as the course of my historical sketch advanced.

I will then, first consider the architecture in question,—this "*novum genus edificandi*,"—from a point of view bearing upon its great structural characteristic as a purely arched style, and one whose strivings all took the direction of rendering that structural fact the main source, as well as the main receptacle, of its artistic character and decoration.

Now what, I would ask, are the conditions necessary to an arched, as distinguished from a trabeated, style?

I would thus define them:—Generally, I would say that such a style should be capable of doing all, whether structural or artistic, by means of the arch, which other forms of architecture had done through the use of the horizontal beam or lintel.

And, to go more into particulars, I would add:—

1. That, as a rule, openings in walls and between pillars, whether taking the form of doorways, windows, gateways, or intercommunications, should be bridged over by arches instead of by horizontal lintels or entablatures, though not descending into such purism as to reject the latter when circumstances clearly point to its adoption.

2. That areas inclosed by walls, or by ranges of piers or columns, and of any reasonable width, should be capable of being covered over,—and, in buildings of the highest grade, should as a rule be actually covered over,—by vaulting. This rule, however, not being pressed so far as to exclude level ceilings or timber roofs,—the one the most natural and economical covering for rooms, and the other for churches, halls, &c.,—where circumstances forbid the use of vaulting.

3. That the decorative system of the architect should harmonise with, and result from, these prevailing structural conditions; the construction and the architectural treatment being, not only in harmony, but in the most intimate alliance the one with the other.

Now we all know that Grecian architecture almost ignored the arch, carrying the horizontal or trabeated system of covering openings to the highest artistic perfection; doing for that system just everything which the above-stated conditions would demand for an arched style. *Repose* was the great sentiment which their architecture expressed; vertical pressure, the one physical condition it had to provide against; whereas arched architecture (as they say in India) "*never sleeps*." It is always exerting pressure in some other direction than the mere vertical line, and the physical conditions it has to meet are the resistance of these, as well as the support of mere weight.

I know, too, that Roman architecture admitted nearly all the constructive conditions we have demanded, and carried them on to a

very considerable degree of practical perfection. We believe, moreover, that had not circumstances checked its progress, it would have carried out these conditions to a much greater extent. As it happened, however, it did not go so far as to make these structural conditions a long artistic element, and the groundwork of a distinctive decorative system; but, being broken up through political convulsion before such an end was attained, it bequeathed the task to the descendants of its despoilers, and long centuries of darkness had to pass by before the work could be accomplished.

In Roman times, the arched construction was in many cases extensively employed and concealed by the decorative features of trabeated architecture; and, where an arch was architecturally treated, it was for the most part by heeding round it the moldings of an architrave or *beama*; and, where a vault was rendered ornamental, it was often by repeating on its coved surface the coffered panels which had originated in a horizontal ceiling; while, in purely arched works, such as the triumphal aqueducts, the architectural decoration was usually ignored, and structural grandeur alone trusted to for beauty. Still, however, some was done to convince us that these great builders were on the high road to a noble solution of the problem, and were only, by external accidents, stopped short of its attainment.

I am not about to indulge in abstract imaginings as to what an arched style of architecture might be if originated without the aid of previous associations or traditions; but I would ask you to follow out, with some reference to the previous Classic styles, and aided by our knowledge of subsequent developments, the rationale of such a style as that whose leading condition I have stated.

We must begin with the simplest elements of the style.

Firstly, then, let us take a mere opening in a wall, whether intended for a window or for any other use. As in the trabeated system, apart from architecture, such an opening would be covered by a single block of stone, so in an arched system it will be bridged over by an arch; and, in the same manner, in the continuous series of openings were required, equivalent to a colonnade, the same simple idea would be repeated,—in the one system horizontal stones lying upon upright ones (as at Stone House) or upon piers, and in the other the openings being covered by a series of arches; the *colonnade* being the ultimate result in the one case, the *arcade* in the other.

To architecturalise the arched opening, or the continuous arcade, the simplest expedients seem to be the insertion between the pier and the arch of an impost moulding to mark the springing line; and, in the arch, either to individualise the arch-stones by chamfering their edges, as the Romans often did, or to relieve their plain surface by moulding, the latter being best adopted when the stone made use of is of only moderate size. The moldings of the arch may, however, be continued down the jamb without an impost, and in either case a projecting rim or hood-mould may be introduced over the main arch to emphasize the line which separates the arch from the superimposed wall.

These simple changes bring our plain arched opening into something like an architectural feature; and, if we apply them to a continuous arcade, the architecturalising process becomes yet more apparent, and it may readily be carried a step farther by adding pilaster capitals to the piers. Another and yet more important step, inasmuch as it is really the basis of a very marked feature in our arch style, is the substitution of columns for the piers of an arcade; which columns, having square abaci, are really as well fitted to support the arch as the square pier itself, and at once give a highly decorative character to our arcade; and the more so if the jambs are converted into pilasters.

The abaci, however, of such bearing-shafts ought to be very different from the delicate flutings of the Corinthian capital; for the arch is not the same inert load which the columns in a trabeated style are destined to carry. It exerts diagonal as well as mere vertical pressure, and so demands a firmer base. This led the architects of the early arched style, while adopting the Corinthian capital, and perhaps reusing those of older buildings, to add to it a strong flat stone as an impost upon which they could safely give the springers of their arches a base larger than the rest of the sustaining column. This form,—that is to say, the Corinthian capital with

an added impost,—became traditional, and we find the limitations of it down to the end of the twelfth century.

We have hitherto supposed our arches to be of moderate depth from extrados, or outer line, to intrados, or inner line, and our walls, perhaps, of moderate thickness. Let us, however, assume it to be necessary to increase the depth of the arch, and that the materials at hand are not of large size. In some of the Byzantine remains in central Syria, where the stone is of great size, we find that they have architecturalised by moldings and enrichments only just so much of the arch-stones as was needful for beauty, and left the rest to go as mere wall-face; and where such large stones are not made use of, it is common enough to build the arch in two rims, and only to deal architecturally with the lower one, or perhaps to leave both plain.

Now, the first may be objectionable where the wall is of moderate thickness and the load great, and the second is well suited to large masonry engineering works; but for ornamental architecture, it is apt to give too bulky and cumbersome an effect. This naturally suggests the idea—while allowing the upper range of arch-stones to occupy the full thickness of the wall—of reducing the lower range to a smaller width, thus breaking the arch section into resalient angles, and thereby both lightening its effect and rendering the piers or jambs which support it lighter and less obstructive to the view.

Simple as this step may appear, it is one whose importance can scarcely be over-stated; for it is the starting-point of the entire system of Romanesque and Gothic arch-moulding; it is the origin of the clustered columns, and the deeply-recessed and richly-decorated doorways which mark the style; and, let it be once in our great measure even the traceried windows which are such leading characteristics of Gothic architecture. For, as regards arches, we had before but one angle to mould, whereas we may now have as many as the thickness of our walls will permit, thus generating at once the great Medival system of receding order, whether of arches or of the piers; and we will presently see that this gives us also our clustered columns, which are, in fact, the mere decoration of the receding orders of the piers.

Let us, however, take another step; and, instead of substituting a column for the group of arch-orders, let us substitute either a smaller column for each of the four orders, thus supporting the arches by a group of four columns; or else let these be united into one complete pillar formed of portions of four columns; or, thirdly, let us place a colonnette under each order, grouping them either in the solid or as detached shafts, round a central square pier. In any of these methods we at once obtain the clustered column.

To the jamb we may apply the same process, either substituting a colonnette for the inner order, and pilasters for the outer ones, or *vice versa*, or substituting colonnettes or pilasters for all. I do not know how early this system of using colonnettes to do merely decorative duty was introduced. We have a specimen of it in the remains of the church built by Benedict Biscop, at Monk Wearmouth, in the seventh century, where, as I have stated in a previous lecture, two balustrade shafts are placed in either jamb of a doorway to support the impost. To go to the far East, we find the system in use in the Mosque of Touloun, at Cairo, built, I believe, in the sixth century. In one of the doorways of the cathedral at Mayence, built about the end of the tenth century, columns and pilasters, with Corinthian capitals, and crowned by a thick impost moulding, are extensively employed to carry the four receding orders of the arch. The whole has semi-Classic details. In the western portals of St. Mark's, at Venice (close upon the same period), we find a profusion of detached columns similarly used. They are of marble and other rich materials, and were probably brought to Venice from ancient buildings in the East.

It may be that the possession of such antique relics, and the long-established practice of re-using them, may have suggested the use of small columns for such purposes; indeed, it is curious that in the case of the Mosque of Touloun, just alluded to, as a very early instance of the use of colonnettes, there is a tradition that the architect, who was a Christian, was imprisoned for refusing to use the columns from the antique chorae, which had been a condition prescribed to him, and only consented to proceed with the work on the withdrawal of this order. Whether

executed, and the gilding shows more than common skill. The "Burning Heart," a porcelain slab, by Miss L. L. Hawkins (31), is a quaint conceit, or "Emblem," better intended than executed. And with mention of a porcelain tray, painted with "David, the Psalmist," and a very good cameo portrait of Dr. Billing, executed from the life, artist not named, we may bring our notice to a close.

Beyond the premiums offered by the Society of Arts, the North London Exhibition Prize, consisting of the interest of 167*l.* 7*s.* 3*d.* Consols, is to be awarded for the production of skilful workmanship in the exhibition of works sent in for prizes. We have reason to believe that this will go to Messrs. W. & H. Robson, for their wrought-iron work for a balcony, a decision in which we should fully accord.

PARIS STUDIOS AND THE "GRAND PRIX DE ROME."

We have mentioned in a former paper the architectural subjects taught at the Zurich Polytechnicum, and at the Ecole des Beaux Arts, Paris. How are they taught? Such is the question we shall try to answer, by sketching the artistic life of a Parisian *atelier*, and the laurels that life leads to.

Plato, Aristotle, and most Greek thinkers were of opinion that learning should be the result of debate, and that a dogma only became a truth after winning many victories, and never encountering defeat. Frenchmen adopt that view with respect to artistic education. They hold that laurels can reach perfection only when helped by experience and copious criticism. An aspiring artist, they think, should have hourly intercourse with other artists bent on aiding him in his artistic efforts. The Paris world of art-students and the Paris *ateliers* are the epitomes of that belief.

An architect's *atelier* in Paris is, so to say, a private club of students of architecture. The master of the *atelier* is an architect of fair standing, perhaps a *Grand Prix de Rome*. The elect of the students, it is his mission to direct and counsel them in their architectural pursuits, and to mark them up for a post-mortem dose of Rome. Nothing can exceed the fatherly anxiety of the "patron" (the master's title) for his pupils, who are, indeed, his intellectual children, and the trustees of his artistic past. A Parisian *atelier* is a republic of young artists ever anxious to rival the hygeine triumphs of their predecessors, and to break new ground. The students are grown men, but as disinterested as pines. They love ideas for their sakes; the artistic muse for her sake; they are not practical. For them an art is an art—not a trade. Many a poor student has found poverty eaten in the fancied halls of his imagination. Many a poor student does the night-draggery of some flourishing Paris builder, in order to have the day to improve his taste and learning with his comrades of the *atelier*.

The teaching is mutual: the fresh men are instructed by the old stagers in exchange for their handwork. Thus, a fresh man goes practice over the plans of an older man, and the boon of his advice; while the advanced student can strike out the most ambitious designs, backed as he is by a staff of half a dozen juniors. So, by mutual co-operation, both tiroos and veterans are equally benefited.

The students mix on terms of familiar equality. A constant exchange of opinions fills the pupils' minds with ready and varied knowledge. As a consequence of this commonwealth life, the *atelier* has a commonwealth spirit. "Unus pro omnibus, omnes pro uno," such is the watchword to which few students ever play false. And yet the rivalry of Paris is fierce, though self-giving. Every man tries his utmost to win, but is bound by the rules of the *atelier* to help others on to victory.

Every *atelier* rejoices in triumphs and memories of its own. One artistic generation after another is drafted into active life; "patron follows patron," but the old spirit is ever brooding its old devotions within the old walls of the *atelier*. Thus, conservative and progressive, each *atelier* strives to hold its own under the banner of its past. Hence the keen competition between *ateliers* for the *Grand Prix de Rome*, the greatest prize that France can offer her artistic artists.

And now a few words about that studentship. The man who is proclaimed *Grand Prix* by the examiners (see *Builder*, Jan. 23), may go and spend four years in Rome or Athens, at the

expense of the French Government. If in Rome, he takes up his abode at the Palazzo de la Medicea, which now belongs to France.

But wherefore these Roman pilgrims? What comes of their musings in the interest of art and France? We shall answer those questions by quoting from M. Garnier's book "A Travers les Arts." The astute critic, speaking of contemporary French art, says:—"The present period is the architectural period of truth, not that of original shams. The inside of a building is what its outside tells us it should be. If we look at the monuments, which are to an edifice what expression is to the human face, we can trace back their genealogy to Greek art, though they often smack of something which betrays the individuality of a nineteenth-century man. They are not copies of a justly-admired style, but new modes of rendering it. The Grecian muse has breathed into us her vital spark, and harmonised our conceptions;—but the conceptions are ours, French art ours. Greece finds perfection, but France fashions it to her genius and her needs, and, by that expansion of Grecian originality, claims an originality of her own, not the less meritorious for its Grecian lineage. Our forefathers worked a Renaissance out of Roman art. We think that modern France is destined to generate a yet more comprehensive revival, which will be the fruit of our minds rather than that of our traditions. All sound reforms must be sound historicisms. So we see that the men who have done most for French art, have been most learned in ancient art. At Rome it was that Duban, Labrousse, Duc, Vaudoyer, Baltard, and others grasped the past with one hand and pointed to the future with the other. At Rome the *Grand-Prix* men gather, at the hands of the great masters of old materials for judicious innovations. One might almost say that old Rome has built modern Paris."

At a dinner given last year by the *Atelier Lebas* to the *Prix de Rome* of former years, the high tide of fire was ornamented with the following suggestive design. In the foreground, the *Atelier Lebas*, and in the distant background, Rome. That design typifies art-education in France. It means years of labour, and, in some cases, years of privation, in order to secure the highest art-training the old masters can give. It means the enthusiasm for the beauty and the ideal, and a determination to prefer them to all material interests. It means the far-sightedness of a people who are aware that, next to religion and philosophy, art is the greatest civiliser that ever came from God to man.

LAWRENCE HARVEY.
Ecole des Beaux Arts, Paris.

THE SEWAGE QUESTION.

A LECTURE on this question has been delivered in the Philosophical Hall, Leeds, by Mr. F. Millier, C.E., resident waterworks engineer to the Leeds town council. The attendance included the mayor and several members of the corporation. In illustration of his lecture, Mr. Millier had prepared an extensive series of diagrams, and to these he made constant reference.

In the course of his lecture he said, a belief had of late years been gaining ground that sewerage works would have to be made for the water and sewage, and in an official report, lately presented to the Home Secretary by Col. Ewart, on the drainage of Oxford, Eton, Windsor, and Abingdon, he had recommended this course to be adopted. This point was likely, ultimately, to prove the key to one part of the sewage difficulty. As, however, Leeds and its sister towns were sewered on the joint system, and as a change to the separate system would be costly, and not likely, therefore, to be readily made, Mr. Millier proceeded to describe the known methods of dealing with sewage as it actually occurs. He then divided it into two principal groups,—first, those which, undisturbed by mechanical or chemical means to remove the offensive matter, in order to convert it into solid manure, which might be classed together as "Sewage Manure Methods"; second, those which took the sewage direct to land, and attempted at once to purify the sewage, and abstract its material elements by placing it in contact with earth, which might be denominated the "Sewage Irrigation Methods." There were other methods of dealing with refuse matter, amongst which he mentioned the Eureka system, as formerly

tried at Hyde; Dr. Bishop's plan, once in use in Leeds; and the Monie's earth-cloth system. He scarcely considered those as being within the scope of his paper, but he believed this part of the subject to be well worthy of grave consideration; for, until a further investigation it might, after all, prove simpler and easier to allow house refuse to become sewage at all, rather than to attempt to purify and utilize it when so made. In illustration of the simplest method of purifying sewage,—namely, by deposition,—the lecturer stated that the sewage of Leeds would fill a watercourse eight acres in width 5*ft.* deep every day, so that a week's sewage would require at least sixty acres of land, or a tract about the size of Woodhouse Moor.

Having mentioned the methods commonly adopted for obtaining a solid manure out of sewage, Mr. Millier proceeded to describe the various systems of irrigation. It was found, he continued, that the sewage of about 100 persons might be utilised on an acre of sewage meadow, and that the effluent water was tolerably pure and free from offensive odour. Having spoken of this plan, as practised at Harrogate, Croydon, Warwick, Edinborough, South Norwood, Birmingham, Barking, and other places, he said that, supposing Leeds had to irrigate, he found that they would have to carry a conduit past Knottingley, where there was almost any quantity of sandy land. If the farmers there objected to use the sewage, we might go to the Thorne, where, on a tract of 5,000 acres, practically worthless, we might demonstrate its value. The great drawback to this scheme was that Thorne Waste was twenty-seven miles away, and as it would involve a conduit twenty-seven miles in length, it was a grave question. How far irrigation had succeeded in a pecuniary point of view he could not confidently say. Its advocates adduced remarkable examples of heavy produce and large receipts, but it could not be forgotten that these were produced upon land which had cost much to put into shape, and required much to keep it in working order. Without in any way ignoring the success and apparent superiority of the irrigation system, it seemed to him that purification by deposition presented in some cases actual advantages, combined generally with prospects hopeful enough to warrant further experiment; by the sewage being used by the chemist working together. It was still open for grave question whether sewage, as we know it, ought to be allowed to be formed at all, and this view of the subject ought not to be lost sight of. In conclusion, he remarked that no single system could be held applicable to all towns and all localities. The sewerage system, in each place, and as to situation, as to level, as to temperatures, as to rainfall, as to markets, and many other matters, must be duly weighed and carefully regarded in devising any proper sewage scheme for that place.

Mr. Edward Carter, F.C.S., &c. (of Torquay), in a paper on "The Chemistry of Sewage," recently read before the Torquay Natural History Society, reviewed the question of the profitable application of sewage to the land. He referred to the immense national loss of the present wasteful system, and after declaring the inadequacy of irrigation, urged the necessity of purifying the excreta of towns, and mixing them with deodorising material, and points out a method by which this important object, he thinks, may be carried into effect:—

"We now come to the consideration of the application of the excreta in a solid or non-fluid state to the land, regularly known as the Torquay system. It is well known that a single objection can be made to the principle of direct application of the excreta in a fluid state, and that is, the great difficulty hitherto has been the want of a suitable absorbing material. Dry earth is not sufficient, and it is not economical to use economically on a large scale, although at Wimbledon during the very hot weather, it was the only system that succeeded."

Mr. C. Stanford, F.C.S., an able chemist, has suggested that seed-char may be used as an economical and efficient material for the purpose, and has made some experiments in this direction, and finds that while perfectly dry earth absorbs 45 per cent. of water, seed-char absorbs 145 per cent. the former becomes a sludge and, while the latter can be easily removed.

The mixture of seed-char and sewage, as recommended, would not, of course, do without producing the least nuisance. It can be stored for any length of time, and used again several times."

At a meeting of the Committee of the British Association on the "Treatment and Utilization of Sewage," at which there were present Mr. Grantham, C.E. (in the chair), and others, the honorary secretary presented the list of subscriptions from the various towns contributing towards the expense of a practical and comprehensive inquiry into the

* *Grand Prix de Rome*, Architect of the New Opera House, Paris.

treatment and utilisation of sewage. He reported that he had addressed the circular to 663 corporations and boards of health, and received replies from 245. The subscriptions amount to 766l., exclusive of the 50l. given by the British Association. Of those towns and districts which replied to the circular and did not contribute, 25 deferred their decision for consideration, and 23 merely acknowledged the receipt of the application without any intimation as to their intention; while the remainder, amounting to 116, refused on various grounds, some because they thought the inquiry ought to be conducted at the expense of the country generally, and some because, though they approved of the inquiry, they were too poor to contribute. The committee, after a careful consideration of the matter, was of opinion that the amount already subscribed was sufficient to justify the commencement of the inquiry, but that unless a larger number of places joined in contributing, the inquiry would not be sufficiently extended.

THE SOUTH KENSINGTON SCHOOLS OF ART.

The prizes to the students of the South Kensington Schools of Art have been distributed by the Prince of Teck. Mr. Cole, C.B., who conducted the party into the new lecture theatre, said that the day for the ceremony was impossible to be present. The Art School of South Kensington was one of 110 art schools in the kingdom, but these were partly supported by subscriptions, while the students' fees at South Kensington paid the expenses of the school. He regretted that the students did not make more use of the museum, which was an advantage such as no other school could possess. About 150,000 students now attended these various schools, which cost about 12 p. per student—a very small sum in the aggregate when compared with the commerce of this great country.

The medals and other prizes distributed were won in the national competition of 1869, and the works to which they were awarded were executed in the twelve months preceding the April of that year. The medals and books distributed represented only the highest grade of distinctions obtainable by students, male and female, and consisted of three gold medals, and the Princess of Wales's Scholarship of 25l., six silver medals, 12 bronze medals, and 21 Queen's prizes of books, all won in the national competition, besides 29 prizes of books, and 22 free studentships, won in the elementary or local prize section. This included the whole of the prizes gained at the great annual competition. At the second grade examination in March, and which consisted of examination by written papers in geometry and perspective, and exercises in freehand and model drawing, 120 students "passed;" 96 won "prizes" and six obtained "certificates." At the third or highest grade examination, 13 students obtained the teacher's certificate. Besides the above regular prizes and distinctions, occasional prizes have been offered by the Department and by manufacturers during the year, some for general competition, and some only for this school. The Worshipful Company of Plasterers offered prizes of 25l. for designs for "trusses," and an "over-door ornament," limiting, however, this school to one subject: two students obtained the prize of 5l. 5s. and 5l. 5s. respectively. Messrs. Corbire offered during the year prizes of 5l. and 10l. for designs for silk fabrics and for paper-hangings for manufacture in France. Besides the works obtaining these prizes others were purchased to the amount of 18l. 5s. and most of these works have been produced in France for the French market. Since the last distribution of prizes, 16 male and 6 female students had been admitted to the schools of the Royal Academy. One student (W. B. Bromley) from the school here had this year obtained the Royal Academy silver medal for the "figure from the antique." In the half-year ending February 29, 1869, the number of students was 382; the amount of fees, 878l. 11s. For the half-year to end February 28, 1870, the number of students is, at the present time, 766, and the amount of fees, 1,363l. 11s. Of the number of students, 470 are males, and 296 females: 199 are free students. Of the 193 schools competing, these schools took 3 gold medals out of 10, 6 silver out of 20, 12 bronze out of 51, and 21 Queen's prizes out of 102.

Mr. Redgrave addressed the students, and

said that one of the principal objects of the school was to elevate the general taste, and to make, not art-students, so much as students skilled to manufacturers. They ought to study the works which others had done, not to copy them, but to stimulate their own invention and to enable them to conceive others in the same spirit.

Of the prizes distributed the following were the most important in the female school.—Gold medal and Princess of Wales's scholarship of 25l.—Marianne Mansell, design for porcelain. Silver medals—Edith Edenborough, monochrome, in oil from antique; Kate Greenaway, head from life, water colour. Mr. Cole specially mentioned a bronze medal for a "time sketch" by Edith Edenborough as an example of rapid execution only to be gained by hard and patient study. In the male school.—Gold medals—William Walter Oliver, drawing from antique; Harry S. Palmer, group, water colour. Silver medals—Charles Edward Black, head from antique; Joseph Harris, design for lace; Edward Charles Blocombe, design, hangings and jewelry; Thomas W. Wilson, design for tiles. A number of bronze medals and of books were also given. At the close of the distribution.

The Prince of Teck congratulated the successful students on what were their rewards for past work and their encouragement for the future. He was glad to perceive that the study of art was placed within the reach of all classes in the kingdom, and he thought we ought to feel deeply indebted to those who facilitated this teaching, which was of value not only to the country but to the whole world. It was also pleasant to observe that some of the designs of the students had been purchased by French manufacturers. He rejoiced to see that a convention had been made for the interchange of reproductions with foreign museums. It was impossible to visit the museum of South Kensington without being reminded of one who had been a great promoter of art and science in the country—the Prince of Consort. It must be a satisfaction to Mr. Cole, who had worked to aid the prince, to know how fully these schools realised the prince's wishes.

FARMING COVENANTS.

At the ordinary general meeting of the Institution of Surveyors, on February 21st, Mr. John Oakley, in the chair, a paper on this subject, by Mr. Elias Pitts Squarey, member, was read.

The principle which ought to govern farming covenants would seem to be, that the tenant should have the freest and most unrestricted use of the lands and premises, consistent with maintenance and yielding up of the freehold at the end of his tenancy in an unimpaired and uninjured condition; and the object of the paper was to indicate the relaxations and modifications, in whatever direction, which appear likely to conduce to increased production without injuriously affecting the interests of the landlord, and to deal with the separate questions of rent, covenants as to cropping, repair, and entries between outgoing and incoming tenants.

We give his observations under the head of Repairs:—

"Repairs are a large and important feature in farm agreements, and probably lead to more questions, troublesome of solution, between the landlord and tenant, than any other condition of tenancy."

The ordinary arrangement is—

1st. Where all repairs are borne by the landlord.

2d. Where all are borne by the tenant.

3rd. Where the landlord provides the materials and the tenant pays the labour.

4th. Where the landlord finds the materials and shares with the tenant the cost of labour.

It is obvious that these varied conditions proportionally affect the rent which is payable, and theoretically it would seem to be of little importance by whom the necessary repair is made; practically, however, it is far otherwise. Left to themselves, and without any liability to make good the wear and tear which inevitably happens to farm buildings, the tenant is too frequently careless of the cost of these repairs, and permits waste and injury to his premises, which had he an interest in their economical maintenance, would never arise. On the other hand, where the entire onus of repair is thrown on the tenant, he is too much disposed to evade, as far as possible, his liability: hence things go on, and, trifling in themselves at the outset, by the end of a long occupation, assume very serious proportions. Arbitrations or legal

proceedings are frequently necessary for their settlement, and it is exceptional if, in such cases, the tenant is not relieved of a portion of the liability which, directly or indirectly, should properly fall upon him. For myself, I am inclined to the belief, that the fourth adjustment of the liability, i.e., the division of the cost of labour by the landlord and tenant, most fairly meets the difficulties of the case.

The tenant's proportion of expenditure is limited to an amount which is more than balanced by the comfort and advantage of the maintenance, in proper condition, of his premises; and to avoid the large liability which is certain to result from neglect of prompt repairs, he will certainly be continually pressing on his landlord or agent the necessity for keeping things in good order.

Let me suggest, as exceptions to the materials to be provided by the landlord, straw for thatching, and glass and leadwork; further, the tenant should be bound to do the carriage of materials for repairs within reasonable distance. As with land, so with buildings, dilapidations at the termination of a tenancy should be more strictly enforced than upon the usual tenant; but it is clear that the tenant should be only liable for a legitimate and necessary repair, and not for restoration or reinstatement.

A discomfit, in which several members took part, followed the reading of the paper, and was adjourned to Monday, March 7th.

LORD BACON AND THE ENCLOSURE OF COMMONS.

At the present time the following scrap from the pen of the "wisest of mankind" may possibly be of some interest. Francis Bacon desired to acknowledge his obligation to the Earl of Essex; but also desired to decline being mixed up with any folly or extravagance in which that headstrong young nobleman might desire to involve him; and concludes a letter to him thus:—"For your lordship I do think myself more beholden to you than to any man. And I say I reckon myself as a commoner; and as much as is lawful to be asked of a commoner, so much your lordship shall be sure to have."

This is an extract from "Spedding's Letters and Life of Lord Bacon." The author infers the following paraphrase:—"You can have for your own share only so much as is lawful to be enclosed;" that is, I can only offer you such services as can be lawfully demanded of one whose chief service is due to the State." G. M.

THE LABORATORY, ETON COLLEGE.

This is a building necessitated by the increased importance wisely given to science at Eton since the appointment of Dr. Hornby to the head-mastership of the school.

The arrangement is shown on the accompanying ground plan; besides which, there is a heating-ventilator arranged under the end of the lecture-room gallery, vaulted over with brick, and two additional rooms on the upper floor for purposes in connexion with the laboratory, which are approached by the passage staircase, and by a door at the gallery end of the lecture-room opening on to the staircase landing.

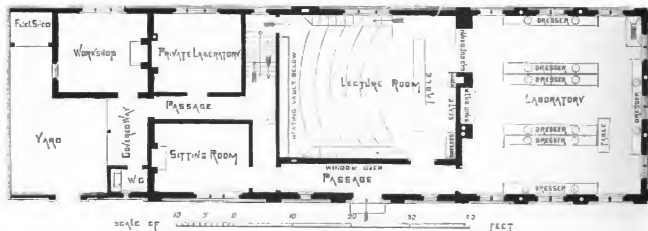
The walls of the building are of local red brick, with Bath stone dressings; the roofs are covered with bridle-coloured Staffordshire tiles, those of the laboratory and lecture-room being open-ribbed. Special attention has been paid to the arrangement and general detail of the fittings, in order to make them as suitable and convenient as possible for their intended purposes; and in the matter considerable thought has been given by Mr. Madan, Fellow of Queen's College, Oxford, and head of the science department at the school.

The building is heated by a boiler apparatus in the vault, and hot-water pipes in connexion therewith running throughout the building; the ventilation of both laboratory and lecture-room has been well provided for; and provision is also made by means of pipes acted upon by gas jets for the purpose of more effectually carrying off the gases occasioned by the chemicals.

The architect is Mr. William Wilkinson, of Oxford; and the builders are Messrs. Farnside & Son, of Usbridge, who are also supplying the heating apparatus. The cost of the building, exclusive of the fittings, will be about 2,000l.



MR. WILLIAM HAYWOOD,
Engineer of the Holborn Viaduct.



THE LABORATORY, ETON COLLEGE.
Plan.



THE LABORATORY, ETON COLLEGE.—MR. W. WILKINSON, ARCHITECT.

THE HEALTH STATISTICS OF
LIVERPOOL.

At a recent meeting of the local health committee, Dr. Trenoh, the medical officer of health, presented his annual report, which set forth that during the 52 weeks of the year 1869, terminating on the last January, 1870, the returns of the local registrars recorded 18,668 births and 14,744 deaths within the borough of Liverpool. Of the births 9,467 were males and 9,200 females, making the total birth-rate for the borough equal to 30.9 per thousand. Of the deaths 14,744 were males and 7,156 females. The death-rate of the borough was equal to 28.9 per thousand, or 3 per thousand less than the average rate which had prevailed during the previous ten years. The death-rate of the parish was equal to 31.6, and that of the out-townships to 25.8 per thousand of the estimated population. There were at the last census, in 1861, 60,760 children under five years of age within the borough of Liverpool; the number might now be estimated at 69,672; and therefore their mortality in 1869 was equal to 10.5 per cent. of the whole. Of the children of every fourth child born within the borough of Liverpool died before attaining the age of twelve months. Zymotic diseases occasioned 4,238 deaths during 1869, and this accounted for 23.7 per cent. of the total mortality within the borough. This was nearly 1 per cent. less than the proportional rate of zymotic deaths to deaths from all causes during the preceding decennial period. Typhus and remittent fever accounted for 783 deaths, or 542 in the parish and 241 in the out-townships—a rate equal to 1.5 per thousand per annum of the estimated population. Under the head of "sanitary privies" reference is made to the conversion of privies into water closets. It appears that to the end of 1868 there were 13,391 privies so converted, and, during 1869, 1,857; so that the work was nearly done. As to registered lodging-houses, the number in the borough at the end of 1869 was 1,149. In addition to overcrowding—for which 549 persons were brought before the magistrates, and fined in sums varying from 1s. to 10s. and costs—the offence of permitting adult males and females not married to occupy the same rooms came under notice, and was entered in the books of the inspector. There were 1,255 males and 1,149 females, and there were also in these rooms 139 children between the ages of five and thirteen years. The medical officer expresses an opinion that the Workshops Regulation Act, however beneficial in intention, is not only impracticable in its machinery, but inequitable in its effects.

CASES UNDER THE BUILDING ACT.

We have received the following letter:

Sir,—We are instructed by Mr. George Willmer, of Vinsange-road, Leyton, Essex, to call your attention to the paragraph in your paper of the 6th inst., entitled "Cases under Metropolitan Building Act," and purporting to be the report of a case before Mr. Ellison, at Workshop-street. There is a sentence therein as follows:—"A fresh notice was given in October following by Willmer, of Old Ford-road, for proceeding with the works, and the houses were covered in the same month." The report then runs,—"The houses remained unfinished for some time, until the builder Willmer could not be found." The last sentence is entirely untrue, and is not in evidence before the Court, and is untrue. Mr. Willmer complains that it is to be inferred from the report that he has gone out of town, whereas he is very near, and that his late place of residence, he could easily have been found.

The report has injured Mr. Willmer's credit with persons from whom he has been in the habit of buying goods, and on his behalf we have to request that an apology for the insertion of the paragraph complained of be sent to us, and that a contradiction of the statement be made in two or three future issues of your paper, and that the contradiction be approved by us. We may add that the contradiction in the one reported was heard at the same Court a few weeks after the one reported by you, and upon the magistrates deciding in favour of the surveyor, a case was granted for the opinion of the Court of Queen's Bench upon the legal point involved in the decision.

We have only to add that, in the event of Mr. Willmer's reasonable request not being complied with, he will take such steps, with a view to clear himself from any prejudicial inferences from the report, as may be advised.

Yours faithfully,

ARTHUR A. WRIGHT, & CO. CLERKS.

We have every reason to believe that the brief report we gave of what took place is correct. The district surveyor informs us, in reply to an inquiry, that he said in court he had endeavoured to find out where Mr. Willmer had gone, but could not succeed, and authorities us to refer Messrs. Appleby, Wright, & Co. to the Court. Our report is a dry statement of what we believe took place, without a tinge of animus of any kind. We know nothing whatever of Mr.

Willmer, and have not the remotest desire to do him any injury. We are quite willing to believe the statement that he would have been found if he had been properly looked for.

DECISIONS UNDER THE METROPOLITAN
BUILDING ACT.

Messrs. Eames & Son, builders, of 5, Northcliffe-terrace, were summoned before Mr. Mansfield, by Mr. Alexander Feebles, district surveyor of North St. Marylebone, to show cause why they refused to pay the sum of £100 for the cost of serving on them the estimates for the work to be done on the wall at the nave end of the English Presbyterian Church, at Marlborough-place, Abbey-road, adjacent after the church has been closed for some time.

Mr. Joseph E. Turner, solicitor, appeared for the district surveyor, but Mr. Eames appeared in person.

The facts of the case, as proved by the evidence, are as follows:—

The notice for the erection of the church was given on the 30th of April, 1869, and about the end of the third week in October the roof was slated over, with the exception of a portion of about 15 ft. of the tower, which was left unslated for the purpose of the scaffolding for the tower, then in course of erection. The wall in question below the roof was intended to be, and was intended to be, some time before the roof was covered in. After the roof was covered in, four windows were cut away for the purpose of improving the ventilation of the church. The windows consisted of three single-light openings, surmounted by a large hood or rose window.

Mr. Turner contended that the roof having been covered in previously to the commencement of the alteration, and the alteration affecting the construction of an external wall, the Special Rules of the 13th section of the Act came into operation, and the district surveyor was entitled to the further fee provided for by the last part of the last schedule to the Act. With reference to the part which remained unslated, he contended that this portion of the building was intended to be, and was intended to be, covered in within the meaning of the 8th section of the Act, and that the small opening left for the scaffolding could not be said to prevent the building from being covered in within the meaning of that section. An offer of compensation of £50 was made by Mr. Feebles, but refused by Messrs. Eames.

Mr. Eames, on the other hand, contended that inasmuch as the roof of the church had been left open, therefore the church had not been covered in within the meaning of the section, and the district surveyor was not, therefore, entitled to the further fee provided for by the last part of the last schedule to the Act.

The Magistrate took the latter view, and said that although the church might otherwise have been completed under the last part of the last schedule to the Act, it had remained uncovered, he should not consider the Adding to have been roofed in within the meaning of the

CONDITION OF THE BUILDING TRADE.

Sir,—I have read in your paper, and I know myself, that thousands of building artisans are out of employ. I believe I may say there never were so many out of work at one time before; and yet I have just now seen the following statement in a newspaper:—

"The joiners of Glasgow have resolved that on and after the 1st of March they will have a half-penny an hour more than at present, and that they will only work nine hours a day."

How are the two statements to be reconciled? I am at issue in corn, and always find that when the price of corn falls, the miller does not lower his price, and wait for better times before I raise it.

ECONOMIST.

Your correspondent, "Tryphie Flane," if he reads my letter carefully, will see that it applies to working men, and not farmers; and that, *per se*, is the mean, and not the extreme, price paid. He quotes Adam Smith; but there is nothing in Adam Smith more relevant than the uncontrollable influences of supply and demand. Your correspondent's list of his requirements is amusing. Why not allow his wife a pair of dapple-grey ponies? It would be as reasonable as to expect what he enumerates, when he has no money to pay for them. He says that he would like to leave the country, whom every sensible man would wish to retain. Adam Smith's observations as to over-stocking the market, and the necessity of the market, that high-priced labour can be well supported when a nation is growing rich. The present argument is, whether high-priced labour can be supported when the country is not "growing rich," and when the supply of labour is so great, and the demand so small. No man who really studies the subject, begins to wonder that of high wages in prospect times; it benefits the man that receives them, but it hurts the country. It does good money the workmen has to spend. But there comes a time when every trading interest is depressed; when a man could afford a house for his own use, but he cannot afford to build, and in a large proportion of second-rate property. Then crops up the question at the present time, whether a collection of workmen should free themselves from the inevitable effects of "supply and demand." This subject is worthy of ventilation by an able pen, but, your correspondent, who does good service if they could satisfy the simple inquiry, "Whether the present high rate of wages is in prospect times, requiring the highest rate of wages in prospect times, and whether it is a testimonial to the national abundance of being out of work under the latter state of circumstances, or whether it is a testimonial to the national abundance of being out of work at the best price the state of trade would afford." If taking this inquiry *en route*, as it were, as the first principle of the inquiry, it may be some justification for a uniform rate of high wages; if the other, *id est*, per hour uniform rate is not so high in prospect times as it is in the first principle of the inquiry, it may be some justification for a uniform rate of high wages.

SEBEL.

Sir,—I have followed with much interest the correspondence on the above subject, and your impression of the 19th shows some of the reasons why the trade is in the state it is. On page 144, there is a letter signed "Tryphie

Flane," which appears to be from a joiner who prefers to be idle rather than work for less than 1d. per hour.

On page 155, we see that the plasterers in Mr. Aldin's employ have been employed to work for 7½d. per hour. These instances show that the working classes do not yet perceive that they must accommodate themselves to the times, although they are employed to do so. The competition to obtain contracts is far too great for much profit to be made; and I should like to know how many master builders have done more than pay their expenses during the last two years, while we know that many have not been able to do that.

There are much more facts and others,—men who have received good education,—who would thankfully accept situations if they could get them, at salaries far below what they feel they are worth; and the estimates must look for employment in the same spirit. The building trade is now in a deplorable condition, and in my opinion will be worse, so far as the operatives are concerned, before it gets any better. It will have to go through the same process of starvation, and steel, and other trades have had to submit to, and the skilled workmen must be prepared to see mechanical appliances introduced into the building of the future to a much larger extent than heretofore.

Architects and builders must turn their attention to labour-saving apparatus in every branch of the trade, so as to bring the cost of building down to a rate that will induce the public again to invest in this class of property. The efforts towards the solution of this question, and steel, seem steps in the right direction.

1508.

"We have received a dozen other letters on this subject, to some of which we may give further consideration."

THE TRAMWAY BILLS.

Not only is the metropolis to be interlarded with tramways, if the numerous projects in hand be carried out; but in probably every large town in the country, tramways are the talk. That a revolution in town transit is on the eve of taking place is evident; and it will be for Parliament to see that the inevitable change is discreetly and properly carried out.

The propriety or desirability of handing over portions of our great thoroughfares to private companies, as proposed, has been questioned; and although it is altogether in favour of tramways, we think, we think a question well worthy of careful consideration. But if private companies are not to be allowed, under any circumstances or conditions, to interlace our thoroughfares with tramways, public authorities ought to be compelled to do so on some consistent and continuous plan. In the metropolis, especially, where there are so many different, and not interdependent, authorities, supervision and a gentle compulsion would especially be requisite.

Mr. William Booth Scott, C.E., the chief surveyor to the Metropolitan Waterworks Board, on the subject to his constituents so far back as February, 1868, and again in the present year. The conclusions of his elaborate report just printed, are of public importance; and we may here give them in a more or less condensed form. Admitting the expediency of tramways, he is of opinion that—

That they cannot be laid and worked on roadways of great traffic, "so as not to impede or injure the ordinary traffic of the streets."

That it would be inexpedient to permit companies of private individuals to lay tramways upon public thoroughfares, as by so doing they would usurp a right to control the use of the thoroughfares by the community large, and would virtually establish a gigantic monopoly of the passenger-travel.

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That the principle of running cars upon the tramways so constructed should be put up to competition and let by tender annually, or for terms of years, upon terms and conditions designed to secure the greatest benefit to the public.

That the revenue derived would not only (repeal) defray the cost of constructing and maintaining the tramways, but would also be a large and constant source as to reduce the general or paring rate at least one-half over the whole.

That companies of private individuals ought not to be permitted to establish a monopoly, and appropriate much to increase their profits, and to the public thoroughfares, but that the revenue should be returned to the community at large.

That the whole question should be thoroughly investigated by a Royal Commission.

Mr. Haywood, the engineer and surveyor to the City Sewers Commission, has also reported to his constituents on the subject. Mr. Haywood says:—

"Special consideration will be needed as to how far a company should be allowed to establish a monopoly of the public highways. The objections on this point have, however, been already made, and I believe, I believe, but have not been thought, in respect of the Metropolitan and Liverpool Acts already passed, to outweigh the advantages which the schemes propose; but, if very large benefits

are likely to accrue from tramways as well as large profits to the tramway companies, and there are objections to permitting private companies to construct them, it is a question whether Railway Boards should not themselves form such tramways out of the public rates; and this is a fundamental question at the threshold of the whole inquiry.

The subject has since been mooted in the Court of the City Sewers Commission, and after some discussion the principle of the schemes was approved, and the subject has been referred to the Bridge-house Committee.

A report has also been presented to the Metropolitan Board of Works by Mr. Baaigatte, their chief engineer, in which he says:—

"Amongst the most important of the 30 Bills deposited with the Metropolitan Board of Works for the session 1868-70, are those for the formation of street tramways in various parts of the metropolis. They are seven in number, and are called the Metropolitan, North Metropolitan, London, North London, East London, and the Fulham, Fencham, and Greenwich (two Bills). The aggregate length of these tramways is about 145 miles; the total capital is 1,174,000*l.*, and the borrowing power 400,000*l.* Most of the principal streets and roads of the metropolis would be, to a greater or less extent, traversed by these tramways, and in many cases the occupation of the same street is completed for by different companies—for instance, in the case of the Metropolitan, the road, and Camden-Town-road, are included in three separate schemes, and the Edgware-road, King's-cross, and Fencham, including City, are included in two. Westminster Bridge-road, and White-chapel and Aldgate High streets, are each proposed to be traversed by two different companies. Four bridges are to be crossed, namely, Blackfriars, Westminster, Lambeth, and Vauxhall. I have on previous occasions expressed the conviction, that, if tramways are to be adopted, it would seem desirable that some uniform system should be laid down, where the interests of the public and the metropolis should be left to the discretion and management of private companies, whose interests would be likely to clash with those of the public and with one another. I am, however, in that opinion by experience of the extensive expenditure which has been incurred in this country by the formation of tramways by rival companies, and by the expense of having a system of lines selected under some impartial jurisdiction to be executed by private companies; and I am still of opinion that it is inadvisable to multiply the tramways of London without having obtained experience as to their efficiency and advantage to the public."

It is to be hoped that Parliament will give the whole question, how best to establish tramways in the metropolis and other large towns, all due consideration before a single Bill is allowed to pass. The subject, we understand, is under the consideration of the House of Commons, and the House of Lords, Earl Grey questioned the propriety of leaving the proposed tramways in the hands of private companies.

THE OXFORD BLADE PROFESSOR OF ART.

In Mr. Raskin's second lecture in the Sheldonian Theatre, Oxford, he said art has a threefold relation to religion. We must consider how far, first, it is literally inspired by religion; secondly, how far exalted by it; and, thirdly, how far it has advanced the creed it advocates. If we analyse imagination, we shall find that divine light, of which we all have a share, has affected the creations of all great artists; but the achievements of art have never been the result of inspiration, but of labour and of those feelings which influence all humanity. There are three essentials to all good work of art. 1. An instinct of construction, which is not enjoyed alone by man, but is shared by animals; 2. A faculty of imagination and vision; 3. A power of accurate design. If the second predominate it is usually the result of mental debarment. An example of this we may see in Albert Dürer's life and death. Some of his visions are no profitable, unintelligent, and unfruitful. A morbid influence spoils his work. This great artist has left us but two works of real didactic value. On the other hand, the best results have been gained by those whose vision was moderated and restrained by accuracy of design. Our best artists are those who are not dominated by no divine influence. One of the greatest of them has asserted that all things are possible to well directed labour. Formative art exercises a two-fold influence upon religion. First, in the realisation of conceptions of spiritual persons; Zoly, the localisation of the supernatural presence. Assume, for instance, in the first case the Madonna present to answer prayer; a truly religious mind would desire only so much of her presence as she designed to give, whereas the superstitions will see before them the actual Virgin. This will affect them in two ways,—first, it will make them believe that they would not otherwise have believed; secondly, it will make them more frequently under religious influences. The first is evidently mischievous. When art causes us to realise fancy, to believe what is not true, it

makes religion degenerate into superstition. If, however, we never lose sight of the fact that it is our imagination which is appealed to, then art is ennobling. The symbolical and realistic are so closely united that in ancient art it is almost impossible to distinguish between them. Now it is easier. It is hard, however, still to say how far symbolical art is improving to mankind. Pictures confessedly imaginary when painted by good men have an elevating tendency, and it is not with these we should find fault, but with the gilded virgins and crucifixes which render superstition a prominent part of them, national character. These are pernicious, and to the honour of England their realistic tendencies have been and are discouraged. Lastly, the most notable and lamentable kinds of this injurious tendency is that which encourages people to lament over the sufferings of Christ, instead of alleviating those of his creatures. How much eloquence, music, painting, and sculpture have been wasted during the last 600 years. How is it that, instead of picturing the misery of our Lord, these artists did not remember some of his last words, "Daughters of Jerusalem, weep not for me, but for yourselves and your children. How many women have been led to isolate themselves from the world—to employ themselves in devotions useless to mankind. How much misery might they have alleviated had superstition not perverted their intelligence. One chief reason of the misery of mankind is this division of sympathy with imaginary saints and bad men whose lives ought to have been kept in the background. What might history have been if, instead of living in a cloud of superstition, contention, and revenge, mankind had elevated the good and helped the weak who live among us."

GOVERNMENT WORKS.

Sir,—The more such excellent and practical advice as "T. L. D.'s" is urged on the Government at the present time, so much more will the public at large be indebted to such correspondence. There is no country on the face of the globe that takes so little interest in its public buildings as England. How few public buildings have we worthy of note? How much longer, as your correspondent justly observes, are the public generally to be kept in suspense as regards the New Law Courts, National Gallery, &c.? The sites are provided, and the money paid for them. Here there would be ample means to provide for the necessities of many deserving artists.

I would not advocate unnecessary extravagance in design for our public buildings, but let them be effective and grand in composition. Who is there that would find fault with Somerset House as a public building? You have fine masses without being overcharged with ornament,—not all adapted to the climate of this country, and which after a few years you find mouldering away, from the effects of soot, and no means of preserving it.

Now, let the Government bear in mind the excellent advice of your correspondent, and at once carry out the designs for the New Law Courts, National Gallery, &c., and provide, or provision, for so many standing buildings, as they would see the good-will of one and all. AN OLD SUBSCRIBER.

SPON'S DICTIONARY OF ENGINEERING.

A TUTUTU, which has attained to the completion of the Second Division, extending as far as, but not yet completely embracing, the section upon bridges and their construction, is now issued by the publishers in the shape of two separate and uniformly bound volumes. It is a most useful design and general character of the undertaking may be well conceived. The present volumes embody the serial numbers of the work in its current and first-projected form of publication, with brief explanatory statements on the part of the editor, Mr. Oliver Byrne, as to the present progress and ultimate scope over which his labours are to extend.

The "Dictionary of Engineering" is not ostensibly projected as a work intended to afford new information upon every subject of which it may treat, as its title in a measure could be said to imply. Reference is freely made to works of well-known authority in special branches of engineering practice; but an impress of originality is conferred upon the present work from the manner in which such references are

applied, and the criticism to which, in some cases, they have been subjected. From the contents of the present volumes it might more fairly be apprehended that the Dictionary, when completed, will be likely to form a notable, if not the first, attempt towards the classification of the heterogeneous and widely-spread branches of practical science, upon the treatment of which the work is mainly founded, an effort which, upon its own merits, may in the view of many appear commendable, and has long been expressly called for.

As an instance of the general design and character of the subjects which may be successively commented upon, the treatise on agricultural implements, which occurs in the first volume, may be noted. The mechanical details which are here given as to the construction of the various apparatus of sowing, introduction and usage in farming, well illustrated and described by numerous engravings and diagrams, are followed up by a comparative inquiry as to the advantages and economy arising in the application of steam-motors and machinery in agriculture. Such an investigation is made to enter fairly within range, and the practical exposition which is given in this the first division, although but one of many subjects enlarged upon, of the successful results which have attended the adaptation of science to farming purposes, could not fail to interest a wide circle of readers, and, in certain directions, to be profitably considered.

When the present work was first submitted to notice, the publishers stated that from careful observation, and from classifying the demands made by professional engineers and the scientific public generally for information in relation to numerous subjects that could not be supplied in any convenient form, they were led to entertain the idea that such a work as the one now issued would prove likely to be useful, not only to the experienced engineer, but to all who are in any way interested in the rapid progress which has been made during the past few years in the successful application of the sciences to the arts.

In the list of subjects proposed to be comprehended in the general undertaking are included those of Railway Engineering, Labour-saving Machinery, employed in the different industrial pursuits, such as the Steam Engine, Steam and Water, Mining, Telegraphy, and further researches upon the Strength and Properties of the Materials of Construction.

The treatise on Bridge Construction, which forms no inconsiderable portion of the second volume, and which might probably engage more general attention, is an interesting and valuable, aside fair to constitute one of the leading features of the entire work.

This section will comprise some portion of the volume next to be issued, and, as proving likely to interest some amongst our readers, we have made reference to it, to the extent of more specific branches of art of which the work up to its present point of issue already treats.

In the part to which we refer, a masterly investigation is entered upon, comprising incidentally observations upon the general theory of constructive science, but mainly and speedily resolving into an examination of the structural application of iron and steel.

The rival claims of various systems of suspension bridges which of late years have attracted notice might well suggest an important element of inquiry in such a work as this which is now projected, and we are glad to observe that we do not regret to have before us in which in any work of similar character within general reach—that structures of this class, of surpassing magnitude and scientific interest, which have been erected in America, have received something of that prominence to which they are entitled. It would be no way have detracted from the valuable diagrams given in this portion of the book had fuller references accompanied them. They are, however, clearly and well drawn; and to the professional reader, who may be fairly presumed to already possess acquaintance with some of the works described, less chance of incoherence or error, if they do not prove more acceptable in their present form.

Although it is asserted that much of the materials required to complete this entire work, so that it may present in a concise and comprehensive form the latest improvements of professional skill and ingenuity, in some of the principal branches of Mechanical and Engineering Sciences, or are to be found in journals devoted to engineering and mechanical pursuits, this portion of the work bears un-

doubted marks of originality, and in a measure which may fairly entitle it to the attention of those who may be interested in that particular branch of the science of which it treats.

The details and general principles of some designs by English engineers are given with illustrations in this portion of the work, including the Charing-cross and Cannon-street railway bridges, designed by Mr. Hawkshaw.

Reference is, however, as yet omitted to more recent works, which may probably be hereafter given, including the important designs which have received the countenance of Mr. Fowler, Sir Charles Fox, Mr. F. and Mr. W. Barlow, and others. The Chelsea suspension-bridge, as well as the elliptical-arched iron bridge at Westminster, both of which were designed by Page, and to which we have had occasion to refer in these columns, have been fairly inserted.

In other portions of the work, no doubt, further references may be appended in relation to recent designs in the structural application of iron. The Francis Joseph Bridge, lately erected over the river Moldan, in Prague, by an engineer of reputation in this country, and to which allusion has been made in various scientific journals, might be well incorporated with the examples already quoted.

After crossing that structure, and walking a little along the bank or rising slope at the Carolanthal side of the river, where a view may be obtained uninterrupted by habitations of any kind, it acquires a singular appearance. From the circumstance of the supporting system of chains being composed of steel, the first application, we believe, of that material in so large a capacity, the superstructure seems exceedingly attracted. The effect is heightened by the novel arrangement of the main-chains, which are disposed in right lines of deflection from the towers to the roadway, intersecting each other towards the centre of the middle span, and designed to be sustained in that position by a curved chain of smaller dimensions, running above their own direction and throughout their entire extent. To this inferior chain the chains supporting the bridge are attached by vertical connections, of lengths varying with the interval between the curved and oblique chains.

It is considered that the reciprocal action of the main-chains, from end to end of the structure acquired by this arrangement, possesses advantages over bridges supported by continuous chains, as in the Brunel, Barlow, Page, and other systems. Notwithstanding the apparent lightness of the structure, it is stated to embody in the principle greater rigidity than has yet been attained in any like class of erection. While public attention is attracted to the possible application of iron in the erection of railway and other bridges of far greater span than any which have yet been erected in this country—may, for instance, over the Serres, Morrey, and below bridge on the Thames, undertakings any of which may be shortly determined upon, and of which it may be said that all are necessary, inquiry upon the merits of later discoveries in the structural use of iron and steel cannot fail to prove of scientific and public benefit.

In taking leave of the present volumes of the "Dictionary of Engineering," at what, though, from the necessity of the case, an interrupted treatise, may upon its conclusion in the succeeding volume prove one of the more attractive portions of the general work, we can fairly commend it as an undertaking of considerable promise.

It will usually fulfil the expectations upon which it was projected, in being useful not only to the experienced engineer, but to all who are in any way interested in the rapid progress which has been made during the past few years in the successful application of the sciences to the arts.

Architect to the Conservative Land Society. The post of architect and surveyor to the United Land Society (Limited), and to the Conservative Benefit Building Society, which was open to public competition owing to the decease of the late Mr. James Wyllon, has been conferred by the two boards of directors on Mr. John Ashdown, formerly surveyor to the Orphan Working School and the Hammersmith Bridge Company, and connected with other public works. There were sixty-one candidates for the position.

KING CHARLES I.'S WATCHES.

SIR.—In reply to the question raised concerning Charles I.'s watches in your number for January last, your correspondent and others may be interested in knowing that a watch given by King Charles to a member of the Worsley family, at the period of his removal from Carisbrook to Hurst Castle, is still preserved in that family in the Isle of Wight.

This watch is mentioned by Sir Richard Worsley in his history of the island, and by other writers, and is also described by "Vocile" in the *Illustrated London News* for February 7th, 1852.

Through the kindness of one of the family to whom the watch belongs, I am enabled to add the following extract from the will of the Rev. F. Worsley, who held the livings of Chale and St. Lawrence, in the Isle of Wight, from 1754 to 1809:—

"I give my watch, which was given into our family by the great and good King Charles I., of glorious memory, to my son, the Rev. James Worsley, of Wight, and to most solemnly and ardently request, and enjoin him to do all in his power to cause it to be preserved in the family of Worsley, his own descendants, &c., to the latest generation."

May the gracious God confirm, prosper, and bless my petition and injunction.—F. Worsley.

L. H. B.

"THE HEARTHES IN OUR HOME."

There is, unfortunately, too much cause for complaint of the manner in which trimmer-arches are constructed for the support of the hearth-stone. The very best brick trimmer-arch is but a clumsy way for supporting the "slab;" it is also quite unnecessary weight to the already weakened trimmer-arch. It was to remedy these defects that I lately introduced a brick-trimmer-arch of boiler-plate, screwed to the joist, which has answered the purpose beyond my most sanguine expectation.

W. J. G.

STATISTICS OF RAILWAYS.

THE INSTITUTION OF CIVIL ENGINEERS.

At a recent meeting, Mr. Vignoles, F.R.S., President, in the chair, the paper read was "On the Statistics of Railway Expenditure and Income, and their bearing on future Railway Policy and Management," by Mr. John Thornhill Harrison.

Diagrams were exhibited, giving a synopsis of this information for twenty of the principal railways in England and Scotland, which represented about 85 per cent. of the entire capital expended in the United Kingdom. The most striking feature of this traffic was the large numerical proportion of third-class passengers, and, with few exceptions, they yielded the largest amount of revenue. The circumstances which seemed to affect the number of persons travelling in first, second, and third class were considered; and whilst it was admitted that each locality required a separate study, it was thought that there were probably some general principles which, with allowances for variable circumstances, might prove useful guides; and it was deduced that where low fares filled the trains, a moderate difference in them effectually served the passengers, and tended to increase the demand for first and second class tickets for long journeys.

On the question of the further extension of railways, it was urged that many lines might be constructed at a cost of from 3,000l. to 5,000l. per mile, provided the landowners would sell their land for the purpose at the ordinary market value, that the Board of Trade would allow level crossings, and that gradients as steep as 1 in 30 or 1 in 30 were adopted.

Attention was directed to the striking similarity on the different lines of the per centage of expenditure on the gross receipts, which averaged about 45 1/2 per cent., and the combined expenditure for maintenance, rolling stock, and locomotive power, which generally exceeded 50 per cent. of the total expenditure, the other heavy item being about 30 per cent. for traffic expenses. The total locomotive charges were generally from 8d. to 9d. per train mile. The repairs amounted to about 3 1/2d. per train mile, when the mineral traffic was heavy, and from 2 1/2d. to 3d. on the passenger lines south of London. Under the head of running expenses, the item of wages was strikingly similar on all the lines, being about 2 1/2d. per train mile. The cost of fuel per train mile varied greatly. On the

southern lines, where the consumption was small, the cost was 3d. or 4d. per train mile, whilst on the northern lines, where the consumption per train mile was large, but the price was small, it was only about 2d.

The per centage of net revenue on the total capital expended exceeded 5 per cent. per annum on eight lines; was between 4 and 5 per cent. on four; 3 1/2 to 4 on one; and 3 to 3 1/2 on two; and only in two cases was it under 3 per cent. This per centage was influenced by the cost of construction and the character of the traffic, and showed the importance of their consideration. The amount available for dividend was dependent on the per centage on the total capital. When this per centage fell below 4 1/2 per cent. the stockholders' dividend was diminished to supply the deficiency, and *vice versa*; it depended most on the burdens to be borne; but where lines could *bona fide* pay all their engagements, and have a surplus to divide, the elasticity of the railway system seemed to promise an early date a fair rate of dividend.

Two large funds for investment of capital were next considered: the national debt, which amounted to 750 millions sterling, and gave a return of 2 1/2 millions per annum, or 3 1/2 per cent., which was a burden on the industry and capital of the country; and the capital expended on railways, which amounted to 500 millions sterling, giving a return of 30 millions, or 4 per cent., per annum; whilst a sum nearly equal to the interest on the national debt was annually expended in labour and materials.

It appeared that 54 per cent. of the railway capital had been expended since 1849, in which year it amounted to 228,747,779l.; whereas in 1867 it was 502,502,857l. The length of railways operated had been more than doubled, being 6,095 miles in 1849, and 14,347 in 1867. The length of double line was increased from 5,034 to 7,844 miles, or 56 per cent.; whilst the single lines had been increased 542 per cent., or from 998 miles in 1849 to 6,403 miles in 1867. Notwithstanding this, the cost per mile was maintained at from 33,000l. to 36,000l. per mile. This was explained by the general traffic having increased 240 per cent., and the goods traffic 400 per cent.; whilst the capital expenditure was only 120 per cent. This augmented traffic demanded extensive increase of rolling-stock, sidings, and station accommodation, especially for goods. The traffic was still largely on the increase, and this would necessarily delay the closing of the capital accounts, which was desirable.

The burdens on railway property, as they affected the original shareholder, and the proposals for relieving these burdens to some extent, were next considered. One of these proposals was, that Government should take upon itself the responsibility of the loan capital at an equitable price; and it was argued, that as they could borrow money at a low rate of interest, they might benefit the railway companies and the public by an arrangement for gradually extinguishing the loans and reducing the fares and rates.

RUSSIAN MEMORIAL CHURCH AT SEBASTOPOL.

LETTERS from Sebastopol say that the Church of St. Nicholas, erected in memory of the Russian soldiers who fell in the Crimea, and dedicated to St. Nicholas the Wonder Worker, will be consecrated in May. The foundation stone was laid in 1856, close to the cemetery known as "The Cemetery of the Hundred Thousand," and the Church of St. Nicholas, already completed as a building, will, when it has been fully decorated, be the most magnificent religious edifice in the South of Russia. The contributions to the building fund from all parts of Russia have been immense, the largest offerings being those of the Princess Vassilitskoff, widow of the late President of the Council of the Empire, who is an annual subscriber to the amount of 15,000 rubles. The church is paved with granite taken from the ruins of Sebastopol docks. The walls are, for the most part, of grey marble from the Crimean quarries. The cross and windows are formed of a Crimean stone called *atonite*, while for other portions of the interior green, black, and fawn-coloured diorite is employed. Above the entrance is the face of our Saviour in mosaic, and sunk into the outer walls of the church are large slabs of marble bearing the names of all the officers who fell in the war. The left wall is dedicated to officers of marine artillery, of cavalry, and of infantry;

the right wall to officers of engineers, of the staff, of the navy, and of cavalry and infantry. Connected with the church is a memorial chapel, containing portraits of about two hundred of the principal actors in the war, including the Emperor Nicholas, the Emperor Alexander II., and the Grand Dukes Constantine and Michael. "Pilgrimages," says the *Gazette of St. Russia*, "will be made to the church of St. Nicholas from all parts of the empire, and there will be an enormous gathering to witness the consecration of the building; for who did not lose a relation in the Crimean war, and who will not wish to visit the grave of his father or his brother?" It would seem, then, that the memory of the Crimean war is cherished by the vanquished.

HARBORAGE.

Sir,—With regard to the progress of Harborage mentioned in the *Builder* of Saturday, the 19th, and especially with regard to the competition plans of the Public Rooms Company, I have, on behalf of Messrs. Abbott & Thompson, and myself, to say that, although the directors have been waiting outside to explain our plans, we were ordered to do so. I enclose a copy of the Harborage papers, showing that the circumstance is being contravened.

RICHARD DRYOR.

WAGES IN MANCHESTER.

A JOINER'S CLAIM FOR WAGES.

A CASE that interested the joiners and carpenters of Manchester was decided by Mr. Headlam at the city police-court. John Johnson, joiner, was summoned by a plaintiff, named Edward Benson, for the sum of £6.10s. as wages due.

Mr. Bent, in opening the case for the complainant, said that during the previous summer there was a considerable dispute in the building trade, with reference to the wages of the workmen—but it was settled by Mr. Kettle as arbitrator. It was then decided by certain of the masters on behalf of the workmen, that certain parties on behalf of the workmen, that 7½d. per hour should be paid from May, 1869, to May, 1870. That, of course, became a rule of the trade, and when a man was engaged it was understood he was hired on those terms except the contrary was stated. In this case the complainant, with twenty others, were engaged by Mr. Johnson on the 21st of January last, but no mention was made of wages. At the expiration of the first week's work, the complainant only received 30s. a week, or 3s. 7½d., and said to the employer it was not at the rate of 7½d. per hour, whereupon the employer replied, "Oh, it is all right; I will make it right next week." On the following Friday day the complainant again only received the 30s. 4d., which he took under protest, and he and fourteen others then left Mr. Johnson's employ.

For the defence it was contended that the complainant did not possess the right to demand wages, as the rule laid down by the arbitrator, and therefore was not entitled to the full wage of skilled artisans.

After hearing some further evidence in Mr. Headlam gave an order for one half the amount claimed.

HOUSE AGENTS' RESPONSIBILITIES.

STINTON V. CURTIS.

THIS was an action (Court of Exchequer, February 16th, 1869), between Stinton v. Curtis, in which a lady against a house agent for alleged negligence in letting her house to a person who was unable to pay the rent. The defendant pleaded several pleas, which in substance denied that he had been guilty of any negligence.

Mr. Oppenheim appeared for the plaintiff, and Mr. McIntyre for the defendant.

It appeared that the plaintiff is a widow lady residing at 1, Langham-street, Langham-place, and the defendant a house agent, carrying on business at Langham-place. In May, 1868, the plaintiff employed Mr. Mow, the then partner of the defendant, but who has since died, to let her house for some months, on the condition that the first two months' rent, amounting to £61, was to be paid in advance before the tenant moved in. The defendant, however, neglected to recover the sum, and the plaintiff, since being unable to recover. She now brought this action to recover the £61, she had an lost, as well as certain expenses to which she had been put in consequence of the defence was that the person in question had improperly obtained possession of the plaintiff's house, and that therefore the defendant was not responsible.

The jury returned a verdict for the plaintiff.—*Damages, 30s.*

RESISTANCE TO FIRE.

Sir,—As a means of preventing the destructive ravages of fire, especially desirable in the case of public buildings, libraries, and in picture galleries, and other premises, I beg to advise that the plating of roofs with sheet-iron plates, as adopted as fire thereby would almost certainly be confined to the apartment they originate in, by reason of the obstacles to the progress of fire by the sheet-iron roofing. The plates could be used as a shelter for libraries, and in picture galleries, and be made to fold or slide away from place to place, and be required. The complete adoption of iron plates on the roofs of the protection of roofs of domestic house lower apartments, would probably result in the saving of thousands of pounds of property, and reduce insurance fees, to such an extent as to pay interest for the extra cost in building houses, offices, and warehouses, guarded with sheet-iron. The surface of the plates would allow plastering, painting, and papering to be used as now, and if necessary panes through the plates, and the plates could be fastened to be made for any purpose. As a desirable measure for adoption, I beg to ask your consideration hereof.

For ships and steam-vessels, the light extra expense of the iron-plating, should be worth action to adopt it, to prevent calamities; a little time gained by opposing the fire may end in saving life through adroit action.

"A similar proposition has been made and carried out in the case of ships, and the plates are put at the upper and underside of the laths. &c. We print the letter simply as a reminder, and to keep under attention the demand for improved construction in the direction of incombustibility."

THE PIPE-LAYING CAT.

THE pretty tale is well known of a prisoner who made a spider's web serve to draw up a fine thread, the thread a string, and the string a rope strong enough for him to escape by. We have created, then, a little story of a young Yankee in Lisbon, Cat, which may go with this. He wanted to lay a water-pipe through a drain several feet below the surface without digging up the drain; so what did he but tie a string to a cat's leg, thrust her into one end of the drain, and gave a jerk. "Cat!" The feline creature, thus made a cat, and dreading of catastrophe or cataclysm, quickly rushed through the other end, as if from a catapult or catapult. The pipe was drawn through by means of the string, and 10 dollars were saved by the transaction—a categorical result entitling this cat of the catamount to be included in the next catalogue of labor-saving machines.

Books Received.

Our Domestic Fireplaces: a New Edition. By FREDERICK EDWARDS, JAN. London: Longmans, Green, & Co. 1870.

THIS is a much improved and enlarged edition of a work already noticed by us in past years. It has been entirely rewritten, and is completely the author's contributions on the domestic use of fuel, and on ventilation.

In his first chapter the author gives an interesting sketch from various sources, of much relation to the history of the fireplace. In the second he details the progress made in this country during the present century. In the third, he enters into the details of various improvements which are possible at the present time, or may become practicable in the future. In the fourth he takes up the subject of stoves and other means for effectually warming the halls and other portions of dwellings, which are now in a great measure disregarded by builders, whom some ignorant critics, we may here observe, in charging them with ignorance or stupidity, speak of as "the lower classes of architects," whereas architects of any class have too often nothing to do with the subject, and are ignorant of "our domestic fireplaces."

The volume is illustrated by numerous plates of grates, stoves, and other fireplaces, hot-water apparatus, &c. A portrait of Count Rumford forms the frontispiece.

The author thus states his views of what could be accomplished by hot-water circulation.

"At one end of a line of houses boilers and furnaces could be fitted, and from the boilers hot-water circulating pipes, protected to prevent loss of heat, could pass in proximity to the houses. From such main circulation pipes, branch pipes, also protected, could enter each house, and be distributed to the various rooms, for drawing off water for baths and other purposes, and with other branches which would admit the water to circulate in the rooms, and be returned to the boilers at the house. That there would be any insuperable difficulty does not appear for a moment. The extent to which hot-water circulation could be carried out, has already been proved, proof of its possibility. Competent persons could be as readily found to manage such a system as to make gas or to drive a railway train. The necessities of a temporary failure of supply would be simply met by every house having the means of falling back upon something provided, and we can substitute candles for gas. And, with respect to economy and efficiency, it is not possible to compare any system but by mere economy, and by being taken into matters of detail, or more efficient, in such as the constant attention of a skilled person should be given to the system, and the demands of the thermometer. Irrespective of this, there would be ample facilities of regulation left in the hands of the occupier."

Merrils of Architecture, translated from the French of Mr. Leffevre. To which is added a Chapter on English Architecture. By B. DONALD. London: Cassell, Potter, & Galpin.

THIS is a pretty little book, very readable, and likely to interest many in what architecture has done. It is not intended for the professional student. The chapter on English Architecture is the least satisfactory part of the volume, and further confuses what was previously said as to its being desirable that persons who write about buildings should know something of architecture.

Take an instance in proof. The author is speaking of "the Gothic style of architecture which sprang into ascendancy during the Middle Ages," and says,—

"The style is also widely known as the *Pointed style* of architecture, and is very largely to be found in the *Saracenic* and *Norman* edifices of this country. What is known as the *Corinthian order* of architecture is, indeed, almost peculiar to the East."

Very peculiar, indeed, we should say. Again,—

"Though the Gothic and Pointed styles are often confounded, there is a considerable distinction between them. In Gothic, the general running lines are horizontal, as in establishments and single edifices; in Pointed, the general running lines are vertical."

The author is evidently at a loss. Nevertheless, it is an interesting little book; and it includes a considerable number of illustrative woodcuts.

VARIORUM.

"A GUIDE to the Churches of London and its Suburbs for 1870." By CHARLES MACKENZIE, Parker, Strand. In this fifth issue of a very useful guide some improvements have been effected, as in the consecutive numbering of the alphabetical list of churches, so increasing the utility of the index. Another little improvement we would suggest. Although the guide is an alphabetical one, there is no alphabetical entry whatever of St. Paul's Cathedral, of Westminster Abbey, nor of the Royal Chapels, under any heading. This is certainly a defect. The reason of it, is that, these churches and chapels are all placed at the head of the alphabetical list, which latter begins with "9. Alban, S. Hilborn," without even a short rule to separate it from the last of the royal list, which is, "8. Chapel within Hampton Court Palace." Let the preferential list remain, by all means; but why not insert references to it in the proper alphabetical order?

Miscellaneous.

Destruction of St. John's Church, Bethnal-green.—A fire has destroyed the district church of St. John, situated at the south-western corner of Bethnal-green. It was a capacious edifice, with sittings capable of affording accommodation for over 3,000 people. Workmen had been employed for some time in enlarging the illuminated iron steeple, and it is thought probable that the fire arose through carelessness on their part; for, about seven o'clock p.m., a glare of light was visible in the steeple, and in a short time the flames burst forth through the clock-tower. Some seven or eight steam fire-engines soon arrived, but unfortunately no supply of water could be obtained for a considerable time. The firemen conveyed the hose into the interior of the church, but their efforts were frustrated from the cause referred to. The flames soon spread to the roof, and by half-past eight the whole of the building was in flames. It was not until time that the engines could get a supply of water. Portions of the roof had fallen in, and set fire to the pews, in the galleries as well as in the body of the church. The fire continued to rage till ten o'clock, by which time the church was almost entirely destroyed. The parish church of Bethnal-green, in Church-street, was burnt down only a few years since.

Geographical Medal and Award to M. Leseppe.—At the general meeting of the French Geographical Society, held on the 15th inst., Dr. Boscq, reporter of the committee to award the Empress's Grand Prize of 10,000 francs, given this year for the first time, announced that the award of that body had been in favour of Mr. Ferdinand de Leseppe, who, by cutting through the Isthmus of Suez, had accomplished the work most useful to the commercial relations of France. M. de Leseppe received from the president the medal which accompanies the prize, and announced that he would devote the sum of money to the expedition which the society is about to undertake into Central Africa.

The Drainage of Margate.—The articles that have from time to time appeared in our columns on the cesspool system at this very favourite watering-place, have, we are glad to learn, on some of the freeholders of the town, if not upon the local Board of Health, and an extensive system of tubular earthenware pipes is now being laid throughout the whole of the large block of houses known as the Royal Crescent Estate. The works are being carried out by Messrs. Dwyer & Son, of Loughborough, from plans prepared by Mr. W. Lane Esq., of Margate, architect.

Accidents.—A destructive fire has occurred in Newcastle, Atkinson's saw-mills having been burned to the ground, and 8,000l. worth of property thereby destroyed. There was a strong wind blowing, and no water was obtainable for a considerable time. This is the second saw-mill burned down in Newcastle within a month.

At midnight, on Friday week, the inhabitants of the Boulevard Jordan, at Marseilles, were aroused by the smell of a terrible crash, which was discovered to have been caused by the falling in of two contiguous houses. After an hour and a half's work, eight men, all still living, but very seriously injured, were extricated, and exertions were being made to discover a young man and woman, who were known still to be beneath the debris. The *North German Correspondence* reports that at about two o'clock in the morning recently, a rather alarming fire broke out in the upper part of the Palace of the Prussian Crown Prince, just above the apartments of the Princess Charlotte, the ceilings of which were partially consumed by the flames. The young Princess herself being removed to another portion of the building, the fire was soon extinguished by the exertions of the fire brigade. The fire is believed to have been caused by a coal or spark from a chafing-dish with which some workmen, the day before, had been trying to thaw the frozen water-pipes.

House of Commons.—In answer to Mr. Locke King, Mr. Ayrton said that, owing to arrangements between the Government and the Metropolitan Railway, the subway projected some years ago from Parliament-street to Palace-yard could not be completed as originally proposed. He had, however, been in communication with the Metropolitan Board, and he had urged upon them the propriety of connecting the subway with the Embankment. Mr. Cowper-Temple asked whether the Government are prepared to take measures for relieving the overcrowded condition of the objects placed for exhibition in the British Museum by means of the erection of a new building for the collections of natural history. Mr. Ayrton, in reply, said the Government had the subject still under consideration. Mr. Samuda also has given notice to ask whether, before the Government approve of the site that may be selected by the Corporation for the waterside market for foreign animals, men will be taken to ascertain the wishes of those interested in the trade, and to insure a sufficient extent of accommodation being provided.

A Caution.—It ought to be pretty well known by this time that the copyright of Mr. Maclean's grand pictures, "Wellington" and "Nelson," in the Royal Gallery, at the Houses of Parliament, was purchased by the Art-Union of London, and that engravings are in course of active preparation for publication. It is taken into time, however, to make such facts known, even to circles supposed to be well informed on such points. Thus Messrs. Ward & Lock had reproduced for publication, as a chromolithograph, the central portion of the Wellington picture, and were about to publish it. On receiving notice, however, from the Hon. Solicitor of the Art-Union that the society would maintain its rights, those gentlemen at once expressed regret for having unwittingly done wrong, and forwarded all the impressions, some 3,500 in number, to be destroyed. Great credit is due to Messrs. Ward & Lock for their prompt acknowledgment of error. We mention the occurrence simply as a caution to other publishers.

The Railway for Japan.—A contract for the construction of a railway has been concluded by Mr. H. N. Lay, C.B. He represents capitalists who have entrusted him with money to be lent to the Japanese Government for the construction of a productive public work, at an advance of one million sterling to the Japanese Government for a line from Yedo to Osaka, some 300 miles, to be built by English engineers. The railway will be the property of the Government.

Banqueting.—The New Cemetery. The contracts for building the chapels, lodge, walls, &c., have been received by the board, and Mr. Wilson, builder, of Canterbury, is the accepted contractor for the erection of the chapels, for the sum of 1,852l. Mr. Durrant's tender for the lodge and wall, at a sum of 2,400l., was accepted; but a letter was read from Mr. Dockett, to which the clerk was instructed to reply, and inform him that the board was not prepared to entertain the proposals contained therein.

The Alexandra Palace.—At Crouch-end Mr. Francis Fuller lately gave an address on the advantages and capabilities of the Alexandra Park and Palace, to a crowded meeting, desirous to hear what was to be done with the Palace. Mr. Fuller, according to the report in the *North Londoner*, said:—

"The British Museum was established by lottery, and he meant to have the Alexandra Palace established in a similar manner by the Art Union system. He did not have in his exhibition of painting and sculpture solely, but of every article of use and ornament, that it might serve as an encouragement to trade as well as for instruction. The value of the palace and grounds was 600,000l., which he proposed to deal with on the Art Union and Lottery system combined. He would collect in the palace 100,000l. worth of prizes, and have a distribution every three years. Mr. Fuller stated that a committee had been formed in the locality to assist Mr. Fuller in his object, which was unanimously agreed to. In reply to a question, Mr. Fuller said he was working in union with the owners of the property, and they had fixed the price at which they were ready to dispose of it."

Mr. Fuller commended his project to the consideration of the residents.

The Water Supply of the City.—At a meeting of the Court of Common Council, to be held this day (Thursday), a motion is to be proposed by Mr. Deputy Stapleton, to the effect that having regard to the report of the Royal Commission, the question of the supply of water to the inhabitants of the City be referred to a committee, for them to inquire and report forthwith to the court as to whether it will be to the advantage of the public that the interests of the existing water companies should be purchased, and that the subsequent management should be vested in the Corporation. At the same court Mr. Cockrell will bring up a report from the coal, coal, and finance committee, recommending that the sum of 1,200l. be expended in erecting a drinking-fountain in Smithfield, and that the corporation undertake to expend the sum of 50l. annually to supply it with water.

Finsbury Park.—Mr. Volliam, superintending architect to the Metropolitan Board of Works, estimates the expenses of this park during the year 1870 to be as follows:—10,000 gardeners, 50l.; park superintendent, 100l.; gardeners, twelve, at 21s. each per week, 655l. 4s.; hire of horses for rolling and mowing machines, average 21. 14s. per week, for twenty-six weeks, 700l. 4s.; repairs to machinery, lodge, &c., 25l.; repairs to fences, roads, walks, and gates, 100l.; manure, 100l.; trees, shrubs, grass seeds, and lake, 100l.; water, at 7jd. per 1,000 gallons (800,000 gallons), 25l.; gas, 4d.; land-tax, 21. 11s. 4d.; poor-rates, 50l.; tithes, 11. 18s. 4d.; total, 1,287l. 17s. 8d.

The Holborn Board of Guardians.—At a recent meeting a letter, dated the 3rd inst., was read from Mr. F. Peck, architect, inclosing a communication which had been addressed to him by Messrs. Bastone & Hunt, as follows:—"Finsbury Schools. Dear Sir: In May last we sent you a statement of our charges, amounting to 254l., for preparing the quantities of the district schools, &c. Hoping you will soon obtain a cheque for us, we are, &c." Mr. Peck, the architect, also claimed 630l., in regard to preparation of plans, and 3 per cent. upon work done, for which, if carried out, he would have received an additional sum of 19 per cent. Consideration of the matter was deferred.

Manchester Ship Navigation.—Considerable interest has been excited, it is stated, respecting the subject, and it is asserted that a conclusion at which practical men who have fairly considered the matter have arrived is, that the proposed plan is quite practicable; and that Manchester and other capitalists are prepared, if the Mersey and Irwell Navigation proprietors are willing to give their earnest co-operation, to contribute funds in order to advance the undertaking. A survey is proceeding, it is said, under the direction of Mr. Felton, engineer, and upon the result of his investigation will much depend the progress of the undertaking.

The Education Bill.—The Elementary Education Bill, introduced by Mr. Forster and Mr. Bruce, has been printed. It fills twenty-six pages, and contains eighty-eight clauses. It is divided into two parts; the first, which extends to 10 clauses, relates to the "Local provision for schools," and the second to the "Parliamentary grant." There are four schedules attached to the Bill, one of which lays down rules respecting the election of school boards, and another directions for the conduct of its proceedings.

The Cambridge Slide Professor.—The Slide Professor of Fine Arts in the University of Cambridge (Sir Nigby Wyatt) proposes to deliver a course of thirteen lectures, as follows:—1, Introductory, March 9th; 2, Architecture, History, March 14th; 3, ditto, Theory, March 15th; 4, ditto, Practice, March 16th; 5, Sculpture, History, March 20th; 6, ditto, Theory, March 21st; 7, ditto, Practice, March 22nd; 8, Painting, History, May 2nd; 9, ditto, Theory, May 3rd; 10, ditto, Practice, May 4th; 11, Modern Architecture, Industry, Ancient, May 20th; 12, ditto, Modern, May 21st; 13, Facilities at Cambridge for the Study of the Fine Arts, May 23rd. The lectures will be delivered in the Fitzwilliam Museum at 2.15 p.m., with the exception of the introductory lecture, which will be delivered in the Senate-house at 2.30 p.m.

London House Painters' Association.—The society that was formed, as we have before mentioned, some months ago, under the title of the London House Painters' and Decorators' Technical Instruction Association, and having its headquarters at the London Artisans' Club, 73, Newman-street, continues its classes at the Marylebone School of Art, and, considering the very depressed state of the building trade, the association has been fairly supported. On Wednesday evening in last week the members adjourned to the large hall of the German Club, in Foley-street, to hear a lecture by Mr. John G. Crace, "On Art Training." Mr. Edward Hall in the chair. The evening's meeting was addressed by Mr. Lamporn, Mr. Shipton (the secretary), and others.

The Restoration of Chester Cathedral.—A meeting has been held in Liverpool for the promotion of the further restoration of Chester Cathedral. Of the 55,500l. stated by Mr. Scott to be requisite for the complete restoration, the Dean stated that works to the extent of 31,500l. had been secured by subscriptions and expended on works, with the exception of 7,000l., now in the bank. The roofs and the interior groining of the nave were now under consideration. A special additional fund of 5,000l. for the groining, &c., while the scaffoldings were up, was now requisite. The whole work could not be completed within three years. The meeting was intended as a preliminary to one appealing to Lancashire in particular for aid.

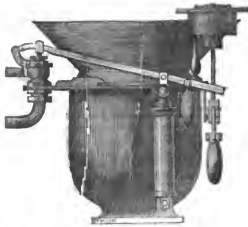
The International Safes Contest.—Trade jealousies still keep up the excitement on this subject. The two American arbitrators and the French one having decided the contest in favour of Herring, the American, without the two English arbitrators, who had resigned in consequence of what they considered not very honourable conduct on the part of the Americans, as action in the case of the Second instance, was commenced by Herring, the American, against the English locksmith, and Taggart, the stakeholder, and after three days' trial, has terminated by a judgment declaring the so-called award null and void, and condemning Herring in the costs.

St. Mary's Church, Terquay, South Devon.—A vestry meeting was held in this parish on the 16th inst., to consider the proposal to complete the church by building a new choir, in accordance with the plans prepared by Mr. Hagall, of Oxford, under whose direction the church has thus far been erected;—the first portion, the chancel and chancel aisles, by the late Mr. Thos. Darby, of Cheltenham; and the nave, north aisle, and porch, by Messrs. Wall & Hook, of Brimscombe. It was decided that it is desirable to complete the church at a cost of 2,700l., and a committee was appointed to collect funds.

Easter Island.—At a meeting of the Society of Antiquaries of Scotland, held on Monday week, Lieut. M. Dundas read a communication on "Easter Island; its Inhabitants, Antiquities, and Colossal Statues." In the course of conversation with reference to Lieutenant Dundas's paper, Dr. Smith mentioned that a previous visitor of the island had found old graves almost exactly identical with those found in the Hebrides and in Shetland.

Value of Land, Derby.—The local papers say that the piece of land at the corner of St. James's-street, fronting the Corn Market, has been sold by the Derby Improvement and St. James's Hotel Company, to Mr. Handall, at 30l. a yard, subject to the approval of the directors who did not take part in the negotiation.

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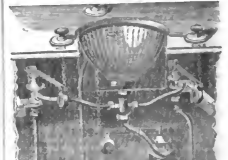
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[E of remainder of Contracts see page 1.

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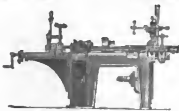


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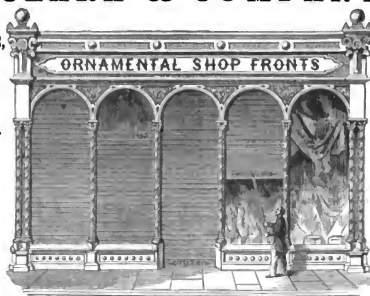
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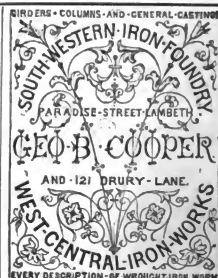
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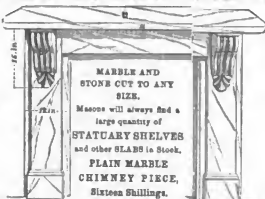
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The Builder.

VOL. XXVIII.—No. 1413.

The Education of England.

HE earnestness with which the Right Hon. W. E. Forster addressed himself to the great question of elementary education, in introducing the Government measure, seemed to sway the sympathy of the House of Commons by its rugged force, and to raise the tone of the debate, in at least the greater number of the speakers, far above the miserable bounds of party. The subject is one too intimately connected with the labours of the *Builder*, for a quarter of a century, to allow us to pass it over in silence. Our readers may naturally expect us to give, in a somewhat concise form, an explanation of the mode in which the Government

parents of the children educated last year added the sum of 420,000*l.* paid by them in school fees. The sum of 835,000*l.* was thus expended on the education of between a million and a million and a half of children, or somewhere about the old English mark per head. Considering the low educational state of the country, it must be held satisfactory to learn that, in providing for the elementary education of the very poorest, the efforts of the parents have met those of the Government half-way. The indication thus afforded of the mode in which more comprehensive and vigorous efforts on the part of the educating class will be met by those whose children we seek to educate, is cheering. One-third of the cost of education from the Imperial revenue, one-third from the local rates, and one-third from the parents, is the proportion in which it is proposed that the funds required for the establishment of a comprehensive system of primary education shall be raised for the future.

In establishing this general principle, however, the Minister has not lost sight of the fact that certain modifications of detail may prove expedient. In the great centres of population, which are so often centres of educational destitution, powers will be taken for establishing free schools in case of proved necessity. And for parents who are *bona fide* unable to contribute to the education of their children, provision will be made for the issue of free tickets. With a sense of respect for the dignity of human nature, alike in rich and in poor, it was added that care should be taken that such free tickets should have no special stigma of pauperism attached to them. We wish we could believe that this system would provide what we insist on, the education of every child; but we cannot, and we look with anxiety to the result of efforts that will be made to modify this part of the Bill.

The Minister is not blind to the crying necessity that exists for revising the entire system of local rates. This question, however, is one demanding time for consideration and for discussion; and no reasonable man can wish to keep the children throughout all England untaught until it is solved. Thus the charge upon the rates may be considered as a temporary part of the measure, subject to revision on the occasion of any general review of the subject of local taxation. In the mean time it is not proposed by the Bill to pass any special education rate, but merely to institute a charge on the poor-rate. In the case, which is not considered probable, of this charge exceeding 8*d.* in the pound, there is a clause in the Bill which stipulates that there shall be a considerable extra grant out of the Parliamentary votes.

Having thus cleared the ground, by explaining the actual state of the primary education of the country, as far as the expense incurred is concerned, and the mode in which it is proposed to supplement the payment of school fees by the parents, we come to the principles of the Government measure. These are two. The first, to which it is proposed to give the force of legal enactment, is, that there shall be efficient schools everywhere throughout the kingdom. The second, if properly stated, is, that no child shall be suffered to grow up in a state of total educational destitution. This broad and wholesome principle, however, is not yet distinctly stated, or provided for. It underlies the idea of the measure; but, from the anxiety which has been felt by the framers of the Bill to secure as wide an acceptance of its provisions as possible, it is rather inferred than enounced. Thus what Mr. Forster spoke of as the second principle is virtually only a corollary of the first; namely, that there shall be a compulsory provision of these schools wherever they may be proved to be wanting, and only where this want may be proved. The measure, however, should go farther. Regarded as a matter of principle, no

maxim can be considered satisfactory short of this: "A SCHOOL FOR EVERY CHILD, AND EVERY CHILD TO GO TO SCHOOL."

In proceeding to the provisions of the Bill, we are reminded in *hinc* of the manner in which the science and practice of the engineer form a basis for all sound legislation. The graphic representation of facts becomes daily more habitual and more important. Thus the first requisite for a School Bill is a school map. The country has to be properly mapped and divided, as a preliminary to any organisation of education; so that there shall be no spot in England or Wales that does not fall within a definite scholastic division. The limits which have been adopted for this purpose are those of existing boundaries. As regards the country proper, the "civil parish" is adopted as a school district. In towns, the borough boundary is taken as that of the educational division. In the metropolis, the districts of the workhouse schools, where such exist, are taken, and, in their absence, the boundaries of the vestries. Classes are introduced to allow of the grouping together of smaller districts, under the name of "United Parishes" or of "Contributing Parishes," but it is not proposed to take the "union" formed for the purposes of the Poor Law as the educational unit.

The outline of the educational survey of the country being thus arranged upon the map, the next step is to investigate the state of educational destitution by actual inspection. For this purpose powers are taken to call for returns showing the number of schools, of scholars, and of children in each educational district. Inspectors are also to be sent down; and any district in which it is found that the existing elementary education is at once sufficient, efficient, and suitable, will be let alone. By sufficient it is intended to express the fact that there are enough schools; by efficient, that these schools give a reasonable amount of secular education; and by suitable, that there shall be no religious or other restrictions to which parents can reasonably object.

Each school district is to elect a "school board." In the metropolitan districts such boards already exist, having been elected by the different boards of guardians within the unions. These boards will remain. In the towns, the town council is to form the electoral body; in the country, the select vestry, when there is one, and the ordinary vestry in other cases. Any person is eligible as a member of a school board; and the number constituting each board is not to be less than three, or more than twelve.

On these school boards is devolved, in the first instance, the duty of providing for the education of their respective districts. How far the information which the Government take power to collect is to be placed at the disposal of these boards, what steps are to be taken for securing the adoption of a general standard of efficiency and of efficiency, and what is to be the normal central control exercised over these boards, does not appear.

The school boards are to have the power of borrowing money on the security of the rates, to be repaid in thirty years. They are to have the power of assisting existing schools, of providing new schools, or of doing both. But they are not to be allowed to assist certain schools, and to refuse assistance to others, on denominational grounds. The mode in which failure of the school boards satisfactorily to perform their functions is to be remedied was not stated by Mr. Forster.

The main regulations under which public elementary schools are to be conducted are these:—The first already exists, being to the effect that the school shall be kept up to that standard of secular efficiency which Parliament may from time to time determine. The second is, that they shall admit any inspector without any denominational provision. The third is

proposes to deal with this master-question of the day. But, before descending to detail and to objection, we cannot omit the occasion of echoing, with emphatic assent, some of the casual remarks of the president of the Committee of Council. The language, indeed, to which we refer, might almost have been copied from our own columns. "We cannot afford to wait," said the right hon. gentleman. Upon the speedy provision of elementary education depends our industrial prosperity. It is of no use giving technical instruction to our artisans without elementary education; and many of our labourers are highly uneducated, and for the most part unskilled. If we leave them any longer unskilled, notwithstanding their strong sinews and determined energy, they will become over-matched in the competition of the world. The communities throughout the civilised world are gathering themselves together in masses; and we know that in our small island we shall no longer hold our position among the nations of the world, if we do not make up for our lack of numbers by our intellectual force.

In the year 1869 an annual grant of 415,000*l.* was required for primary schools in England and Wales, of which 11,000 were day schools and 2,000 were night schools. About 1,450,000 children were upon the registers; and the average attendance was about 1,000,000. Not more, however, than two-fifths of the children of the working classes between the ages of six and ten, and not more than one-third of those between the ages of ten and twelve, are on the registers; so that out of 1,700,000 children of the earlier age 1,000,000 are untaught; and out of 750,000 children of the later age 500,000 are untaught. The million of children attending the schools thus form the minority; outnumbered in such formidable proportions by those who are left to a self-acting preparation for the workhouse and the gaol.

To the 415,000*l.* provided by Parliament, the

of the earth has been displaced, a chalk shingle has been introduced, in hope that future mishaps may be prevented. We shall not anticipate with what result, standing as it will alone.

In one of the passages belonging to the barracks a very deep well is constructed, capable, we are informed, of supplying 95,000 gallons. The water is pure; and this reservoir is formed also to catch the clear soil and cliff drainage underneath, and without the vicinity and circuit of the fortifications.

When finished, the fort is intended for the permanent location of about 200 men. At present there are only about half a dozen of artillerymen stationed there. The works will be hardly completed within two or three years. Mr. Kirk is the contractor, and there are about 150 men, including mechanics and labourers, employed.

Having said so much about defences, we may well begin with the offence. Well, Newhaven has hardly taken off her nightcap yet; and notwithstanding that it is a pocket station *à la* Dieppe, she has not awoken to the important position she might occupy in the van of progress. As a pocket station it is a very good one. The railway kisses the skirts of the town, and pours out a living nocturnal freight on her wharf; but, alas! they are only birds of passage that alight there for a moment, to again wing their flight across the Channel. Newhaven and its modest hotels, spasmodic inns, and dreary shops, are so far from being a place of resort, that the Hotel at the harbour crimps the money folk, and what is spent is spent while the boats are waited for. The town hotels and inns are mostly depending on the country and farming classes. Talking of hotels, Newhaven town contains but two bearing any approach to the appellation we give them. One is called the "Bridge Hotel," the other the "Comet Hotel." The latter lives on the still reflected glory of posthumous patronage. It has a Royal memory. It had the honour of giving shelter, bed, and board to a fugitive king in 1848. Poor Louis Philippe, after his unfortunate flight, rested there; and perchance as we write we are sitting at the breakfast table, and the waiter, perhaps the worthy landlord designs to accom-

modate us with the same cosy bed on which the dethroned monarch lay. See what it is to follow in the footsteps of the great, even in the far distance. The worthy landlord does not forget to inform the public of the honour of his establishment, the front of the hotel, the painter has told in conspicuous letters, that this hotel was patronised by Louis Philippe in the year 1848.

The streets of Newhaven, if we can call them streets, are small in number, and with the exception of one or two,—High-street, for instance,—might more appropriately be called roads or lanes. One is in the hands of the postmen, the other, properly speaking, in any of them. The streets, and where the pathway should be, are one natural level. The rain, when it falls, runs down what channel it lists. The major portion of the town has been built on an incline. The drainage makes quick "trucks" down the nearest slope, and finally kisses the muddy Ouse. In the town proper the population is but small, scarcely over 2,000, and the idea of a local Board for Newhaven is at present but a dream. When the town aspires to that position, her sanitary reformers will find no difficulty in perfecting a proper system of drainage and sewerage.

Approaching the river Ouse made a sort of horse-shoe circuit some distance above the town, passing into the harbour again in a straight line opposite the town. A useful bit of engineering, however, was accomplished two or three years since,—this ugly bend of the river was cut through, and the river made to continue a straight course. This improvement necessitated a new bridge, as it completely severed all connection with both sides of the river. The old bridge, of course, crossing the bend, was left almost isolated in consequence. The circular part of the river now forms a sort of back-water, with two mouths, entering into the main channel. This portion is still in use as a sort of lower harbour, and the old road and old lift bridge has but little service to do save to let an occasional small craft pass round to the back of the town. On this now almost neglected estuary of the Ouse shipbuilding once flourished for a short while; but all is now gone, and nothing but a dismantled shipbuilding shed, and shattered ships, broken piles, desolation, and doom is now apparent.

The new iron bridge is one of the revolving

telescope principle. It presents a good roadway, but as a construction it is not over-strong. It is opened occasionally to let small vessels pass. It is, however, not troubled with much dead weight in the form of merchandise, as the railway relieves it of the trade and manufactures outward and inward bound.

On an elevated hill overlooking the town is the old parish church dedicated to St. Michael. Its tower and chancel are very ancient, but the body of the church is a restoration of some sixteen years since. The coping stones of the tower, over which a low shingled roof springs, are supported by a series of corbel images reaching all round. Several of them are very fantastic and *outré*, and the majority are much defaced by time. Two or three small double-arched windows perform the tower. One of these is in a dilapidated state of preservation—columns and capital. The nave, north and south aisles, are of flint, with small windows in the pointed style, with Ouse stone dressings. The restoration is daintily built, but it is destitute of ornament or beauty.

The old churchyard is crested over with a fine specimen of an English yew tree. It contains a few old monuments of no interest, and in a churchyard of its size we never remember to have seen so many poetical epitaphs. Every third or fourth slab one meets with rhyme if not reason. Out of the number we were tempted to transcribe one, which we give as the epitaph on the tomb of a soldier. It occurs on the monument of one Thomas Tipper, a brewer of local celebrity, who manufactured a famous Newhaven ale still called after him. The epitaph runs:—

"To the memory of Thomas Tipper, who departed this life May 7 17th, 1788, aged 54 years.
Reader, with kind regards the brave survey,
Thou'lt find a gallant peer where Tipper's soldier lay.
Honest he was, ingenious, blunt, and kind,
And dared to do what few dare do, speak his mind,
For did one knave's act to get his gold,
We would in Physics and Surgery too!
The best old things he both brewed and sold,
For did one knave's act to get his gold,
He played through life a varied comic part,
And knew himself no less a thorough by his art;
Be better, wiser, laugh more if you can."

Reader, so runs the immortal Tipper's epitaph: we fear there are very few even London brewers of the present day could lay claim to all the varied talents of the Newhaven brewer of old. There is a tombstone here also to the memory of Thomas Rogers, surgeon, of H.M. Prison, who died at an early age in 1830, much regretted by his messmates. He was a native of Newtown Mount Stewart, in the county of Down, and of the name of George Rogers. This slight notice of his grave on the wild coast of Sussex may awaken a memory of him in his native land. The conspicuous monument in the churchyard is an obelisk erected to the memory of Captain Haason and 104 officers and men of the *Brasen*, school of war, lost on Newhaven coast in January, 1800.

On the west of the harbour, on an elevation, a coast-guard station has been recently erected, of brick construction.

Before taking leave of our subject, we shall direct attention to the great natural facilities that exist for making Newhaven an important and progressive seaport. We have said at the beginning that the town was progressing but slowly. In saying this we spoke nothing but the truth. The small coasting inward trade of Newhaven is, as present circumstances stand, and as it is, an unimportant one. Some of this passed upward on the Ouse to Lewes in barges. The outward trade consists of flints for the Staffordshire Potteries, and some timber for ship-building. The goods traffic of Newhaven and Dieppe is, at times, considerable.

The harbour of Newhaven would be much freer from ice as a harbour of refuge if it were deepened and widened. The present entrance is under 200 ft. wide, and possibly at highest tide the depth of water does not exceed 22 ft. At an ordinary tide, it runs about 16 ft. or 17 ft. At low water, the steamers and other craft are lying some feet deep in mud, and the depth of water in the centre of the harbour there averages about 6 ft. This is a bad state of improved harbour management for a shipping port.

One or two dredging steamers are wanted for Newhaven harbour, and there is sufficient to do all the year round for the larger number. One might be employed always in the harbour, the other on side dredging and other approaches. A considerable distance must be gone out before 7 fathoms of water are obtainable. In a short period and with

no great amount of labour, men-of-war of large dimensions could ride in near the harbour. This would be a great advantage taken in connection with the new fortification. Between Newhaven Cliff and Seaford Cliff the beach is low, and the sea-line occupies a circuit inland. This area could be utilised by the construction of breakwaters and deepening for an outer harbour, where a whole fleet might ride in security and safety. On Seaford Cliff a battery in connection, as required as well as at Newhaven. The present fort and martello tower would not tell for much in case of invasion.

A fine opportunity exists at this moment for utilising the sewage of the Ouse, and Newhaven offers every facility as to place, position, and the proper carrying out of a native guano company. On that spot of ground which has become an island by straightening the river, the necessary works could be erected. Surrounded as it is on all sides by the river, loading and unloading barges could form a cordon round the island; and the River Ouse, which is navigable for boats as far as the prosperous town of Lewes, would be the means of transit for the supply of the sewage to farmers.

A careful consideration of the subject, and personal observation of the ways and means, convince us that we are risking no idle opinion. There are thousands on thousands of tons of sewage—rich mud—easily convertible into admirable manure, lying on the banks of the River Ouse in Newhaven harbour; and thousands of acres between Lewes and Newhaven are semi-sterile for want of manure.

We have pointed out a neglected resource in Sussex, and we trust that it will not be long until we hear of its development.

If a few men of capital and spirit would establish a sewage and manure work at Newhaven, they would soon conquer prejudice, and they would shortly find that the investment of their capital would yield a remunerative return.

Shipbuilding is a trade that could be easily revived in Newhaven, and could be carried on with advantage to the port and to the promoters. If the boats of the River Ouse were again used for shipbuilding, dock gates would be necessary at both entrances to the main river.

We hope that whenever we retraced our steps towards Newhaven we shall find it more prosperous than it is at the commencement of this year, 1870, and that the few hints we have thrown out will have been taken to heart. Again we are that Newhaven possesses great advantages, and that it only requires a little public spirit and some outlay to give the town a position commensurate with its port, and to make both port and town worthy of each other as places of commercial enterprise and national importance.

Another neglected resource which offers good facilities for its development in connection with Newhaven, is the fisheries. A colony of fishermen could, with little expense, be located here, and with proper boats and gear, no danger would exist of not having a good market. With through communication to the London markets daily, any quantity of fish could be despatched and disposed of. Brighton and Lewes alone of the Sussex towns, in the visiting season, would consume large quantities. Newhaven, however, has always been wilfully neglected, harbour and town. From the year 1731, when an Act was passed for repairing the harbour, to about a decade ago, little or nothing was done. At the end of a century a quay, and also the same complaint existed; the piers were decayed, and the mouth of the Ouse was choked up with mud and sand, so much so that vessels over sixty tons would not venture into the harbour. A small ship-building trade was carried on in Newhaven even in the middle of the last century; but, as we have already remarked, this is now extinct.

Employment of Soldiers in Trades.

In the Commons last week, Mr. Harbort-Treacy asked whether it was the intention of the Government to promulgate regulations for the employment of soldiers in the trades which are connected with the supply of their clothing and subsistence, the stores required for their use, and the repair and construction of their dwellings. Mr. Cardwell said it had been decided to organise in each regiment a corps of artificers and tool-makers, and with that view to twenty-six regiments. A military committee had been appointed to consider the details of the arrangement.

ARCHITECTURAL OUTLINE.

Those who are accustomed to observe, or, better still, to study and sketch, the many varieties of natural scenery, know well how much of the character and expression of a landscape depend on the mere forms of the lines bounding its several gradations in foreground, middle, and extreme distance.

This applies not only to the broad distinctions of mountains, undulating, or flat landscape, but in each and all such to their various parts; as, whether the transition of form be abrupt or gradual, few or many within the ordinary angular scope of a picture. A mountainous landscape may fall of grandeur through roundness or monotony of form in its lofty features, and a flat scene may be redeemed from tawiness by the boldness, variety, or piquancy of the vertical objects, natural or artificial, which break its line against the sky.

Any one who is familiar with landscapes of the Flemish school of painters will easily recall instances in which Jacques and Solomon Ruysdael, Abraham Storck, Francis Decker, and others have proved on their canvas the capability of interest, from happy treatment in this respect, possessed by a landscape, in which, however, which might seem to an ordinary spectator incapable of picturesque effect.

In many of the paintings of these artists the relief from the monotony of a dead flat horizon is produced almost entirely by the projection against the sky of the very distant towers and gables of some distant report, in which, however, the distinctive characters of the buildings, in spite of their minuteness through distance, are wonderfully preserved, and when, as is sometimes the case, a town occupies the middle or near distance, this truth of character is still more marked.

The same observation holds good with regard to the pictures of Canaletto, and to those who have not visited Venice the modern art of photography confirms the perfect truth with which he caught and rendered the varied features of the city which he helped to make famous. Among the artists of our own school of the last and present century, some deserve the same word of praise for truth and character in delineating architectural character. Francis Nicholson and Girtin among the early water-colourists, and David Roberts in the school of oil painters, specially claim this merit. F. Mackenzie, Gandy, and others, professionally architectural artists, scarcely come under the same category, as truthful delineation is the specialty of their line of art.

The great part in the expression of a picture, comprising buildings among its elements, which is dependent on the forms of these where they are included in the bounding lines of the composition, is as certainly and evidently true as is what has been said as to natural objects, and it is much to be regretted that among the many delineators of topographical scenery this fact is so frequently lost sight of; detracting from the interest and value of otherwise often beautiful pictures, in which the artist has seemed content merely to catalogue, as it were, the features of a town or village, losing sight of distinctive character, and thus sacrificing essential reality and truth. Some will argue that this precision is of no importance, and that to demand attention to it is to bring down fine art to the level of mere realistic representation; but this we hold to be a great mistake, for while deprecating as earnestly as any artist can the petty attention to mere detail, which destroys beauty in seeking for it (which it does not secure), still we hold that essential character, that which in buildings, in natural objects, as in man, gives individuality, is called for in every representation claiming interest from local associations.

Take, as no exaggerated example, the view of such a city as Oxford, in which the spire of the cupola, St. Mary's spire, and Magdalen tower all represented in due position by an artist, but of proportions evidently varying from what are really theirs, would a view comprising these objects, thus rendered, convey the impression of the scene, to one unacquainted with the place, or recall the feeling excited by it to one who knew and was attached to it? The true province of a landscape art, in all its varieties, is to convey to a spectator, in the fullest extent, the best impressions which the real scene would excite under the particular aspect or effect chosen; and to produce this, characteristic delineation of all prominent features, whether natural or artificial, is essential.

It sometimes happens, alas! that some of the leading features of an otherwise interesting scene are discordant with, and detractive from, its charms, and the artist would fain find means to omit them from his picture, or to screen their deformity from sight.

Such, for instance, are the cemetery obelisk, and gaworks chimney towards the east end of Edinburgh; the latter, indeed, forming a fatal blot in all views of the town within its range, and demonstrating the destructive power in architectural scenery of a single prominent object out of harmony and scale with its general features and character.

Such being the fact, of how great importance is it that the artists entrusted with the design of buildings, of a scale or kind occasioning their forms to enter into the sky-line of town or village scenery, should bestow upon them the utmost study and care, and be in harmony both with their own purposes and with the surrounding objects? and how much is it to be deplored that a false ambition should often lead to the production of something either fashionably trite, or novel and "striking" (mis-used phrase!), rather than fitting or congruous in such cases?

This appears to us to have become in some recent years a characteristic of the present day, and as regards the first-named error, the towers of some of the lately built and more lately projected townhalls may be cited; and as to the latter, but too many of the steeples of recently designed churches.

That a type of form diverse from the ecclesiastical one should be employed for municipal buildings is doubtless proper and rational; but that so many should be crowned with square towers, hip-roofed, and terminating in a flimsy timber spirelet, seems neither one nor the other; nor could any better reason be perhaps truly assigned for this than that the example has been set by one or two of the most successful and practical, and that most of these buildings being the subjects of competition, the public fancy required tickling with what its palate had learned, however uncritically, to relish and desire.

This form has in reality little force of effect, and is subject to one great source of weakness in the very small proportion which it occupies, generally octagonal on plan, bears to the breadth of the tower when seen on the diagonal.

Not invidiously to name examples, it may be enough to say that some of our leading towns have of late years acquired additions to their architectural outline of this kind, which can never be regarded with satisfaction by unbiased critics, while an additional regret is excited that occasions have thus been missed in which the liberality of outlay might have secured, with more independence of design, features conducing vastly more to local architectural effect.

Such examples, however, as the cupola of the Leicestershire and Lincolnshire Assize Hall at Halifax (and we may add that of the new municipal buildings in Liverpool resembling the latter) must be named as exceptions to this too general form, and such as by their vigour and decision of outline conduce much to the architectural sky-lines with which they combine.

There can be really no valid excuse for monotony of design in features of this kind, if only real artistic study be given to them. Why should it be less possible to vary the towers of secular than of ecclesiastical buildings? And if in examples of such fundamentally similar structures as the towers of York, Canterbury, Lincoln, Durham, and Gloucester cathedrals such a marked individuality of character is exhibited, why should not more variety of design on generally resembling bases be aimed at and achieved in our municipal halls?

As regards ecclesiastical design, the error seems, as said above, to run rather in the desire after novelty (often really but imitation of some foreign style or example) than in adherence to type; and thus we have towers corbelled, machicolated, turreted, and saddle-backed; and spires pierced, shafted, "coroneted, pinnacled, and buttressed, producing ponderousness in one case or fritter in another, where a studious endeavour after dignity and fitness in design might have secured much more of true originality at, probably, not indifferently less outlay.

The scope for variety in the simple combinations of form required in steeples is scarcely less extended than exists in music for melody, and to cite examples all simple, all fine in themselves, but widely differing in treatment, it is not necessary to go beyond a few English parish churches, as Ewerby, Bixham, Rensde, Heck-

ington, Newark, and Stamford,—a list which might be vastly extended both in this simple class and those of greater scale and pretension.

It can hardly be that the oft-inculcated and most needless practice of deriving the *expressive* can have been resorted to in producing some of the rather ambitious, not to say ostentatious, steeples designs of the day; scarcely can it be that a diagonal elevation or section has been tried before settling their arrangements of form; or surely we should have been saved some examples which, as the designs are *expressive* in the tolerable, while the diagonal view is weak, ill-proportioned, and ungraceful, sadly contrasting with such designs as our old church builders have bequeathed to our admiration in the class of examples cited above. Recurring to the illustration with which we set out,—natural scenery is full of suggestions of design to the careful student, and the nature of the bounding lines of elevated buildings no less than in those of mountain, crag, or cliff, may expressions of dignity, repose, vitality, and cheerfulness be produced without any sacrifice of structural or statal sufficiency; but only by the exercise of patient thought and careful study, proportionally to the character of the design, but all more than repaid by a result securing to some perhaps already noted point of scenic effect a new feature of recognised harmony and symmetry, enhancing without disturbing the prevailing architectural character, and such as would be felt as wanting to its completeness, could it be that the latter once allowing its influence to be appreciated.

THE LIMITATION OF LOSSES BY FIRE.

Since public attention has been directed towards an investigation of this subject through our columns, we have been favoured with various communications and statements having reference to certain issues involved. Amidst the numerous comments which have appeared in connexion with late disasters, including the destruction of the Star and Garter Hotel, and the timely losses of the managers of a life, we fail to see any thing so startling, and with a view of effectually lessening the general risk in similar cases which may be expected at any moment to arise.

To put into a practical form the views to which we have already given expression, as to a more efficient system of fire protection, we find ourselves again constrained to call to prevent notice the important, if not decisive, relation which the insurance system holds in this direction.

In the present juncture it may recommend itself, as a matter of good policy, even in connexion with the interests of those important associations, should they be induced to share our views.

The extensive losses to which the various insurance offices are so eminently exposed, by reason of their dependence upon the system of protection afforded by the metropolitan fire organisation, might well invite criticism. No less than 30,000, it is stated, will have to be contributed by the insurance companies to make good the loss sustained in the destruction of the Star and Garter Hotel; and it cannot fail to occur to many that by an expenditure, with a view to protection, rather than restoration, of probably one-twentieth of that sum, advantageous results might have been fairly expected to have followed. It is at this point in our appreciation of the importance of the subject, that we fail to satisfactorily meet the demands of the community, and the unaccountable obliquity displayed in covering the risk of the insurance of the Star and Garter may challenge unjustifiable comments. There was scarcely any water in the tank, and what there was could scarcely be said to have been in any way available. There was not a really practical fire-engine in the town. There was no fire-scope. It might have concerned even the interests of life insurance companies to have interfered. But there was scarcely anything to be detected beyond the mere acceptance of the premium, and of the risk. To point out the error, and to suggest a corrective means of increased gains, although it may necessarily follow from the adoption of the course which we seek to suggest, is not our more immediate object. The long succession of destructive and fatal fires now in course of being recorded in the daily press, peremptorily appeals to the common sense of the public. Our hopes of some practical remedy being at length

discovered for, at least, mitigating the usual incidents by which many of these occurrences are attended, receive some confirmation from the circumstance that the matter is now likely to recommend itself to the consideration of the insurance companies. Considering that a sum of more than one million sterling is annually returned to insurers by way of making good the annual average loss of destroyed property, it might, even upon the score of expediency, be asked why some adequate proportion of this sum should not be expended to prevent such disasters as those to which we allude altogether, as well as with a view of limiting the amount to be returned to the public on account of life and property destroyed by fire. Supposing, then, that the entire sum of one million were expended in the direction which we have indicated, the insurance companies, we find, would still in their new relation to the public stand to realise a net yearly gain of five millions; for which they would be in all probability, and having reference to the two elements we call upon to render no service or return to the public whatever.

It is obviously within the capacity, and to some it might appear within the good sense, too, of the insurance interests to take this matter in hand in a broad and liberal spirit, and to seek to arrive by actual experiment at the comparative reduction of the ruinousness of the public which would result by placing at the command of the Metropolitan Fire Brigade, or of some similarly constituted body, an annual sum representing one-fourth of their usual restoration returns, or, say, an amount equal to 21 per cent. of their net gains.

It is, however, from this question may be now treated by the fire insurance offices, the public have been gradually led up to a position from which it may reflect upon the curious fact that, after contributing regularly every year a sum of nearly six millions sterling to the Insurance Companies with the view of realising preservation from losses by fire, the results as to the salvage of the property are miserably small, the innocent, while with reference to human life they may challenge the imputation of deliberate if not criminal indifference.

It is found that by allowing things to take their course, and in abstaining altogether from devising a more effectual means of suppressing and reducing fire, a balance of nearly five millions remains to the insurers, and is paid after the payment of all losses. It is singular that in recording, as the public journals have done lately, the loss of more than twenty lives, owing to the absence of any practical means of rescue from fire, and a large destruction of property, this, which we regard as one of the most lamentable elements of the present, does not appear to have attracted observation.

It is now likely to do so; and inclined as we are as guardians of the public interest, and on the broader grounds of humanity, we would lend a ready co-operation to the insurance authorities to bring the disastrous element of fire under more effectual subjection. We believe that it may scarcely be disputed at the present crisis that in approaching this matter as we have done, we are acting in favour of existing assurance associations in saying that if some practical step be not speedily resolved upon, the public may devise some wiser appropriation of the immense resources which are entrusted to the insurance authorities for the purpose of the protection of property at the present moment such little cause for congratulation may be discovered.

ARCHITECTURAL DRAWINGS IN THE ROYAL SCOTCH SCOTTISH ACADEMY.

THE Royal Scottish Academy seems to have been affected by the example of the Metropolitan Academy, in turning a cold shoulder to the architectural profession; for we are given to understand that an unusual number of the drawings sent for exhibition have been returned to their owners. Be that as it may, the number of architectural designs exhibited is much below the average of former years. As a set-off to this, however, we may place the election of Mr. Dick Peddie, architect, as an academicien, — an honour which he has fairly gained by the untiring energy he has displayed, and the careful manner in which he has endeavoured to impart an artistic feeling to the numerous important works entrusted to him. No. 214 is "A Suggestion for the Improvement of Edinburgh." The drawing represents a winter garden at the extreme west end of Princes-street Gardens, with

the Ross Fountain, now being erected, in front of it. This garden has frequently been met with the special attention of Mr. Peddie, many of his suggestions being appropriate and suitable to the locality; but we have doubts whether the placing of a Crystal Palace under the shadow of the Castle Rock would be an improvement in an architectural or artistic point of view. Such an erection would doubtless be a great boon to the denizens of the New Town in weather such as this, when the cold biting winds from the Forth render it a hazardous proceeding to lounge in the usual promenades; but Mr. Peddie had better look out for another position for his winter garden, although such, we fear, may be difficult to find. No. 217, "The Interior of the Station and Hotel for the Caledonian Railway Company," would, on the other hand, be an undoubted improvement. The site is conspicuous and open, and the design elegant and appropriate; it bears some resemblance to the new stations recently erected in London, but is not an echo of the best sections of the same. We are, we are long, we take the place of the present paltry wooden erection. As to No. 13, "St. Martin's Abbey, as proposed to be altered and enlarged," we are not acquainted with the mansion proposed to be operated upon, but presume that the architects (Messrs. Peddie & Kinross) followed up and improved upon the style of it, which, as shown in the drawing, is of the late French Chateau variety. The disposal of the parts is effective and lively, with a sufficiency of shadow and plenty of window-light.

No. 284, "Interior of the Church of St. John the Evangelist, Alloa," by Mr. Robert Anderson, is, in our estimation, the best section of the interior produced in Scotland for many years. It is a simple nave and chancel of thirteenth-century Gothic, unusually good in proportion and rhythmical in detail and polychromatic decoration. Mr. Anderson also exhibits an exterior and interior of a proposed new church (353). It is a cross in plan, and has a tower at the west end, the section, which is open to the interior. It does not show much power of invention, and is too like an old example.

No. 25, "Design for Presbyterian Church, Capitol Hill, Washington" (Mr. W. Nicholson, architect), is a commonplace affair, with picturesque air, displaying neither originality nor sufficient knowledge of Gothic design.

No. 259, "Blair Athol, Perthshire, the Seat of his Grace the Duke of Athol," is an unassorted example of the Scottish Baronial style, by Mr. David Bryce, having nothing unusual or particularly calling for remark on it. A Gothic bridge, crossing a stream, in front of the main entrance, gives picturesque to the foreground.

No. 258, "Dumfries and Galloway Royal Infirmary," by Mr. John Starforth, is carried out in the pavilion manner, with some degree of architectural pretension: the sky-line is not satisfactory, but what there is of detail is not deserving of censure. No. 14, "Theaters, Kensington & Jenner's New Building, St. David-street, Edinburgh," is an *ad captivandum vulgus* in compo, after the manner of the new Boulevards in Paris. In our city in the empire is the use of compo less necessary than in Edinburgh, where the finest building material is at command. Upon a conspicuous part of the building itself appears the inscription "G. Beattie & Son, architects," an inscription in as good taste as the edifice upon which it is inscribed. In No. 272, "View of the Staircase, Craigend Mansion," by Pilkington & Bell, we have a drawing showing that the interior of this mansion — which is Gothic in style, and occupies a commanding site within a few miles of the city, is equally ornate with the exterior. If the *utiles* is not sacrificed to the *dulces* (a fault of the architect), it is a most attractive and desirable residence. Messrs. Pilkington & Bell are not successful in their street buildings: the "Eastern Club, Dundee," is unhappy and overstrained both in style and in a few miles of the city, is equally ornate with the exterior. If the *utiles* is not sacrificed to the *dulces* (a fault of the architect), it is a most attractive and desirable residence.

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Mr. James Gowans gives another view of his buildings at Castle-terrace (No. 1); and Messrs. Cousin & Lescaze a "Perspective View of Proposed new Buildings on the East Side of the City" (No. 143). It is really a relief to find that in some parts of the city domestic street architecture is meeting with some attention; for if we turn to the extensions to the west and south we find nothing but what is

tame and commonplace appearing. The terraces and squares erected in the city years ago, under the superintendence of the late Mr. Playfair and Mr. Gillespie Graham, were remarkable in their day as architectural works; but now mere builders hold sway in this department, and when an architect is employed, he is restricted from giving any individuality or character to his elevations. Occasionally we find a new villa in the suburbs worth looking at, but the same evil prevails here also. Mr. W. Richardson seems to have made villa architecture his special study, and with some degree of success: the two designs exhibited by him (No. 27) are superior to most in the neighbourhood, and would be attractive to the eye.

Every architectural design exhibited has met with notice; so that our readers can form some notion of the meagreness of the display. Edinburgh is being outstripped in its architectural decorations by many of our second and third rate towns, which have nothing like its surpassing position for architectural effects; and, as far from discouraging the younger members of the profession by rejecting their drawings, it would be wise policy in the Academy to give them every encouragement to exhibit such of them at least as delineate buildings already or about to be erected, so that they might be subjected to a healthful criticism, even although they may not be attractive as pictures.

WORKS AND IMPROVEMENTS FOR THE CITY.

A DEPUTATION from the Institute of Architects have made another visit to the Corporation of the city of London to keep open the vacant space near the Mansion House, — whether successfully or not has yet to be seen. Amongst other improvements contemplated in the City, there is a plan now under consideration by which the site of Newgate-market may be appropriated for public use. The market, as such, was abolished by a special Act of Parliament which came into operation in December, 1863. The City architect has prepared a scheme by which a large block of building may be erected. It is proposed to surround the building with a roadway, 30 ft. wide, and both light and air to be admitted to the premises and to the existing houses. Two passages will traverse the building, one from north to south, and the other from east to west. The ground floor will consist of sixteen shops, averaging 15 ft. wide and 85 ft. deep, and the first and second floors of offices and warehouses. The basements will be suitable for cellars. The City will make direct communication from Newgate-market into St. Paul's Churchyard, but are counteracted by the authorities of St. Paul's, who have unexpectedly come into a good thing in respect of the ground, in consequence of the abolition of the market, and are not disposed to meet the propositions of the Corporation to make the opening.

An offer has been made to the City Commissioners of Sewers by the Dean and Chapter of St. Paul's to lay into the public way about 6,500 ft. of ground at the west end of the cathedral for the sum of 20,000*l.*, and this has been agreed to on behalf of the Commissioners. An application will be made by them to the Board of Works, to contribute towards the cost of the improvement. Other changes may soon be expected in Ludgate-hill, where several houses have been taken down, and in various other parts of the City. Surely the sum asked by the cathedral authorities is over large, remembering that it is not land from which they could derive any revenue? We long ago urged the desirability of setting back the railways around St. Paul's, and the improvements that might thus be effected.

Arrangements are being made to effect improvements in Long-lane, Aldergate-street, and St. Martin's-le-Grand. A new library and museum are shortly to be erected in Guildhall, at a cost of 30,000*l.*, exclusive of the land.

A plot of ground has been set apart near the Metropolitan Meat Market, on which a handsome drinking-fountain will be constructed, and trees planted.

The Markets Committee of the Corporation has recently been called upon by the Council to inquire into, and report on, the question whether daily vegetable, meat, and fish markets should not be established in the City. In their report they state that they requested the clerks of the different vestries and district

boards of works in the metropolis to furnish them with the names of the markets in their districts, and any particulars with respect to their establishment, construction, and working. From the answers, they have arrived at the opinion, looking at all the circumstances, that it would not be advisable for the corporation at present to take any steps for the establishment of additional markets in the City. This report was unanimously adopted at the subsequent meeting of the Court of Common Council.

A correspondent writes,—"Have you observed the plot of land at the south-east of the Holborn circus which the City advertise for letting, and which will block out the view of St. Andrew's Church? Have we so many monuments in London that we can afford to shut out even the few buildings we have?"

Certainly not: every endeavour should be made to preserve such open spaces as can be formed, and to bring our public buildings fairly into sight.

THE MATERIALS FOR ECONOMIC BUILDING.

Sir,—Of many interesting social problems which, at the present time, are forcing themselves upon the minds of thinking men, that of "The Materials for Economic Dwelling Houses," so ably treated in your impression of the 5th inst., may well occupy a foremost place, seeing that from its even partial solution may flow results of the highest importance to society—increased comfort, increase of wealth, and last, though not least, increase of the term of human life. Having for some time past paid much careful attention to the subject, and carried my views into practical aid, and I think I may add, successful effect, so far, indeed, as to induce me to patent the application in this and in foreign countries, I am encouraged to offer for adoption, or at least discussion, the plan which appears to me to meet most of, if not all, the requirements specified in your paper, viz., "Perfect shelter, rendering inmates to a great degree independent of the rapid and violent changes to which our climate is exposed; roof, walls, and floor so constructed as to resist the fury of the winds, the downpour or drift of rain or sleet, the exudation of percolating water, and, further, to keep out the extreme cold of winter, and the excessive heat of summer."

And now I must apologise beforehand for the sketch which, in unfolding my plan, I shall be forced, however, reluctantly, to administer to all well-regulated architectural and building minds. I shall have to introduce to them a much-despised member of the family of building materials, whose name up to the present has been a term of reproach, and whose stains has been only that of a Parish among his fellows.

Let me at once take my moral "header," and confess to what I well know will be held heretofore—a firm and reasonable faith in the virtues of lath and plaster when employed as I shall presently describe. Nothing, certainly, will be more sweeping than your own condemnation of the brick of the period. Like the just now much-abused British workman, he has taken to bad ways; he is clumsy, ill-conditioned, and the truth is not in him; he is for working shorter hours whilst demanding longer pay; but, worse than all, he drinks sadly too much when he gets a chance, which, Heaven save the mark! is often enough in this moist climate of ours. Then as to his aristocratic *confère*, stone, that gentleman's services are become too expensive for any but the most wealthy employers; besides, he is not at all to be relied upon (for some of our public buildings), whilst in too many cases he is as confirmed a "soaker" as his argillaceous fellow-unionist.

When employers of labour find their work-people too restless and dictatorial, they are forced by the stern necessities of competition to introduce into their place machinery, which, almost automatic, can be easily directed by recruits from the "great unskilled" class-men, who, readily learning any simple mechanical operations, are only too content to better their condition by accepting not only lower wages than their predecessors, but being more amenable to the routine of workshop discipline; so, impelled by similar logic, when certain materials become costly, or bad, or both, a host of inventive minds at once ransack the storehouse of nature, and, sooner or later, in the search, discover some substitute, which, by

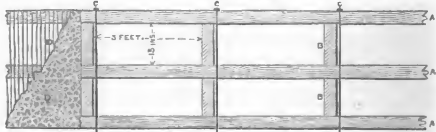
ingenious adaptation, often more than compensates for the previous deficiency.

The principal desiderata, then, for a healthy dwelling-house are, as stated in your article, that the substance entering into its construction should be non-absorbent and non-conducting. Now, brick, stone, and even granite, are to a large extent both; *ergo*, they do not fulfil the first and most important condition demanded by your argument. This conceded, where we turn to their *remplois*? Slate and iron, both of them, are non-absorbent; but, as you remark of the first, they are much too active conductors of heat and cold, whilst timber, pure and simple, though it approaches closer to what we seek, is not only too costly, but in many essential respects is completely *hors d'œuvre*.

And now I will proceed to describe my system of building; and whilst entering upon the explanation, I may remark that I do so as no mere theorist, unfolding an even well-digested scheme, but I am writing from practical experience of the results of my views carried out and in use for a considerable period. On a slight base course of concrete I raise an open framework of wood, constructed on a new principle, to which I attribute most of the success of my plans.

This framework, when put together, is, without straining too much the sense of the Latin word you quote, a sort of "*opus latervium*" and "*opus reticulatum*" combined.

The annexed sketch will best describe the idea I wish to convey.



AAA are 1½ in. battens (7 in. wide), extending the entire length or width of the building.

CCC are ½ in. iron rods, screwed at both ends, and furnished with nuts and washers, running vertically through holes bored in the centre of each batten, at distances of 3 ft. or 4 ft.

DD are wood, iron, or brick supports dividing the horizontal strings, and when braced together by the long bolts, CC, form the pillars or columns of the edifice.

DD shows a portion of the framework covered with laths, preparatory to plastering, cementing, or otherwise sealing the outer envelope of my wall, and the inner side of the wall is treated in the same manner. Not only are these bolts, CCC, used along the walls, but they are introduced at the angles in such manner as to make the building, when screwed up tight, to be as strong and rigid as a packing-case (which is mainly due to the wall being simply a coffer of cells), and, were it possible, such a framework might be turned over and tumbled about with but fear of any serious injury in the way of displacement or breakage of the structure.

I need scarcely draw attention to the value of this quality for countries where earthquake shocks are violent or frequent.

In place of wooden battens I use sometimes sheet-iron, bent to a trough-like shape, on the edge of which I bolt wooden strips or strings, on which to nail the laths; and in place of wooden blocks or columns, I use short iron pipes, through which the bolts pass. I ought to mention that all the floors are collected, as far as possible, into one or two groups, and built of ordinary brick or concrete.

Having completed the skeleton walls, and introduced the several windows, doors, &c., I proceed to lay and plaster inside and out (or in place of plaster I use cement, which may be conveniently or economically procured). I have thus 8 in. or 9 in. of wall made up of cellular cavities, containing, of course, air, and forming the best possible non-conducting shelter from our wet climate and ever-varying temperature.

It would seem as though, at this interesting sensation of damp which assails us on entering most houses (especially if long unoccupied), and which arises from the walls charged with moisture, hanging like a wet blanket all about, had been reduced to a minimum by this system of construction.

Various buildings have been erected on this plan by myself and others, and some of them in very exposed situations; one, by the bye, where more than twice the wind pressure has exceeded 30 lb. to the square foot. In another case, although the house has remained unattended during the whole winter, and no fire except that of the kitchen lighted, the bright steel of the drawing-room stores remained un tarnished. The fact is, the inner is so separated from the outer envelope, that, however driving and drenching the rain may be, it can never find its way across the intervening space, so perfect is the insulation, and so comparatively slight is the substance of the exposed surface, that the least sun or dry wind suffices to remove all traces of wet. Between the moisture-charged brick exterior and this, there must be the house-dweller, be as wide a difference as between damp sheets and dry to the sleeper; and it requires little acumen to determine which is likely to act most favourably on the health of the human subject.

Of the sanitary value of my system, I can only as yet speak theoretically, all the houses I have completed having so far been quite free from cases of sickness; but it appears to me that the *mephitism* of the French hygienists—foster-child of damp as it undoubtedly is—cannot possibly enter and lurk here; the first condition of its existence is wanting. Were the cavities in my walls hermetically sealed from the outer air, then they might possibly inclose a stagnation favourable to its development; but

through them flows a constant though scarcely perceptible current, which must quickly and surely eliminate from the maison infect the fell miasma of disease and death.

To prevent the absorption of deleterious gases, &c., by the internal wall, I use a strong washable paper, whilst on the outside I have already applied hair mortar, and rough-cast it with clean gravel, which gives a pleasing appearance as well as great durability. I have employed also for the inside walls and ceilings, in place of laths, wire netting, which not only makes a room virtually fireproof, but gives a solidity and superior finish worthy the attention of the architect. Should there be any question as to the durability of lath and plaster, I would refer sceptics to some of the oldest buildings in this country, where it may be seen lingering on in a wonderful state of preservation, but just lacking that which, in my scheme, gives full force and effect.

Were it not that I am conscious that I have already trespassed too much on your forbearance, I could enlarge on other salient characteristics which commend this method of applying building materials to the consideration of thoughtful constructors. I am well aware that the system I have attempted to describe will provoke much prejudice and opposition, as I have found in other innovations afterwards approved and adopted by the world; but I venture to hope that the importance of the question will at least lead to its being fairly tested, more especially as its cost is considerably below that of the ordinary mode of construction. I may just remark that I am about to patent other improvements in construction, which I have reason to believe will prove valuable to the architect and builder.

W.

Education of Women at Cambridge.—It is reported that the establishment of classes for girls at Cambridge has proved remarkably successful. Upwards of fifty daughters of local tradesmen have availed themselves of the opportunity of receiving instruction from the most distinguished professors at the University. The lectures are a repetition of those which are delivered as a part of the University course. It is probable that several scholarships for girls will be established in Cambridge.

were compelled to re-open the establishment as an 8d. per hour shop, but refused to re-employ any of the men who had struck work. Under these circumstances, subscriptions are being collected through the trade for the support of the men, and it appears that several men who have collected subscriptions in various shops have been discharged for so doing. A meeting of carpenters and joiners was held on Saturday at the King's Head, Ebury Bridge, Pimlico, when it was resolved to support those who had been thus discharged or refused employment.—A movement is also on foot amongst the metropolitan carpenters and joiners for obtaining a reduction in the present scale of labour; and at a meeting of 100 delegates on Saturday, a committee of thirty was appointed for the purpose of bringing the movement publicly before the whole trade, with a view to combined action during the coming season.—At a meeting of building trades operatives in Northampton it has been resolved that payment by the hour from May next be rejected, and that the rate per hour be 6d. for all skilled workmen, and others in proportion. A code of rules is also to be submitted to the employers for their approval, including a proposal to refer differences to arbitration.

PROPOSED WORKS FOR MIDDLESEX.

Last week, at a meeting of the magistrates of the county of Middlesex, a report was submitted by the visiting justices of the House of Detention, Clerkenwell, stating that this prison was deficient for the reception of all the United prisoners committed thereto, and that it was necessary that it should be enlarged. After a good deal of discussion, a motion was submitted for the approval of the Home Secretary, that steps be taken for enlarging the prison, according to the plans submitted to the magistrates. Accompanied with the report of the visiting justices, a recommendation was made for 20 additional prisoners. The estimated cost of the proposed extension is 25,000*l.*, including the purchase of land.

A letter has been addressed to the Middlesex Magistrates by the Home Secretary, pressing upon their attention the urgent necessity of providing additional space accommodation for the pauper lunatics of the county of Middlesex. The representations made to the Home Secretary by the Commissioners in Lunacy and the local authorities, are so strong that he can sanction no further delay, and he hopes that steps may be at once taken to erect another asylum. A special committee has been appointed by the magistrates to take the matter into consideration.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE I.—Continued.*

In our Norman buildings colonnettes are for the most part built in the solid of the piers, which would suggest that they are not there in the earliest stage of their use.

The principle once adopted, there seems no limit to the variety in which it is capable. Shafts may be substituted for all of the arch-orders, or for such only of them as may be desired.

Where the arch consists of more than two orders, a half-column of larger size may be made to support two or more, and smaller ones may flank them carrying single orders. Where, again, the lower order is wide in its soffit, it may be carried either by a large semi-column or by coupled colonnettes; and where there are three orders, the same may be applied to the front, bringing the pillars to a uniform design on all of its sides.

We have already seen that single columns may be used to carry arcades of two or more orders, either by breaking them back into receding angles, to fit them to the orders of the arches, or by making round or octagonal abaci large enough to receive them; and such single columns may be alternated with clustered piers.

There is, however, another extensive variety of pillar compounded of two or three orders. Let us suppose a single column supporting orders of a single order, and that we desire to extend the arches to three orders, retaining the same main bearing-shaft. We may imagine the additional orders to be super-added on all sides of the original square pier, and additional colonnettes (attached or detached) placed round the original bearing-shaft. The same may be applied to an octagon, placed either angularly or in its usual position. The process may be carried a step farther, and eight colonnettes be set round the original bearing-shaft. In St. Mary's Abbey, at York (towards the end of the twelfth century), we have an instance of sixteen colonnettes thus placed round a bearing-shaft, but only eight of them carry separate orders; and a little later, in the cathedral at

Genoa (the work apparently of a northern French architect), we have no less than twenty-four colonnettes similarly ranged round an octagon; though here, again, only eight are represented in the plan of the abacus or of the base when it rests upon the floor, the others being introduced probably for the relief produced by the varied colours of the marbles of which they are composed.

A little later the colonnettes themselves become grouped in threes and fours, and their edges often filleted or "keeled," that is, decorated by an arsis or edge projecting from their round surface. Thus, at Lichfield, in the older portions, groups of three shafts united into one, carrying a common abacus, were placed on each side of an octagonal bearing-shaft. At Wells, similar triple shafts were set alternately against the faces and in the internal angles of a cross-formed nucleus, with alternately square and octagonal abaci.

My purpose, however, is not to enumerate all the varieties of clustered pier, but to explain its principle, and at the same time to show how unlimited an artistic element was deducible from an intent thus founded on the natural conditions of arched construction. To go much farther would carry us on prematurely into the succeeding styles, and would be to discuss a subject, which, though pierced to its principle to a still further development, I allude to groined vaulting, of which I shall have to treat in detail when I reach it.

Before, however, I quit the subject of arches and piers, I must say a few words on the application of their principles to doorways and windows, though these must be viewed as the subjects of a future lecture.

Doorways differ in no degree, as to principle, from archways, excepting in having, at some point in the thickness of the wall, more or less recessed at pleasure, what Professor Willis calls the "doorway plane"; that is to say, one of the arch-orders so formed that the door may be hinged to it and may shut against it. The actual opening of the door may or may not be stopped on this plane to a square heading, the arch over it being filled in with a tympanum, plain or sculptured; or it may be altered from the form of the main arch to some shape having less height.

In all other respects the principles already stated apply equally to doorways as to archways. The interior, however, has to be varied if the door fills in the arch-form, with a view to facilitating its free opening; but this is a practical point not useful to be here gone into. The orders of arch-mouldings in a doorway often continue down the jambs, as in one of the magnificent doorways at Malmesbury Abbey; or they may be replaced by colonnettes or pillars, and the methods may be united in the same doorway,—just as in another door at Malmesbury, continuous mouldings alternate with colonnettes,—and the arches, jambs, and capitals, and even the shafts of the colonnettes, may receive any degree of sculptural enrichment.

The doorway varying a point on which much architectural character was concentrated, and great depth being necessary to give the required effect, it was customary to thicken the walls at the doorways by various expedients, so as to obtain depth enough to give several orders of arch-mouldings; this increased thickness was covered over by gables, and by other means.

The width, too, of the jambs of doorways is often increased, and more space gained for enrichment, by giving to each order in the jamb a larger space than would otherwise be necessary of square face between the shafts.

In some cases, also (as in the exquisite doorway at Castle at Durham), where a small arch order which continues down the jambs between the principal orders, and adds much richness to the effect.

In later examples, two ranges of shafts were often introduced; the outer ones carrying the outer orders, and the inner ones having capital's lost order, and the capital as having an imaginary order hidden within the outer range of arches. These are, in fact, the parallels of the supernumerary shafts I have mentioned as often existing in clustered piers. Thus, in St. Leonard's Priory, Stamford (a work of the twelfth century), we find two ranges backed by a plain played surface. In the Gallies at Ely (somewhat later), the same range is broken by a series of piers between salient mouldings; and again at Lichfield, the back range is, as at Stamford, placed against a played surface, but relieved by ranges of large toothed ornaments running up behind each of the front shafts.

The windows, also, differ from more arched openings in having a functional plane, which occupies one order, and is needed to receive the glazing. The orders are never so numerous in windows as in rich doorways, rarely exceeding two besides that which receives the glass. The inner side is usually played, to diffuse the light through the interior. It is not my intention in this lecture to treat in detail either of doorways or windows; but having stated that the system of receding arch-orders was one cause of the origin of window tracery, I will say a few words in explanation of my statement.

Many early windows and window-like openings—such as those with triforium galleries—were divided into two or more unequal portions by pillars and small arches in the inner plane or order; the outer order or orders embracing the whole, and the plane of the inner or functional order forming a second wall-space over the heads of these subordinate arches. Thus the triforium at St. Bartholomew's was divided into two unequal parts. This window plane, as it may be called, is often ornamented in different ways, and occasionally, even in Norman work, is pierced. At a later stage this piercing becomes systematic, and has received the name of "plate tracery," the plate being the window plane or order. It is simply the plan of the window, and the order of the window arch; and as it is clear that this piercing developed itself into window-tracery, so it is equally manifest that the plane thus pierced originated in the division of the window-arch into receding orders; and, consequently, that tracered windows were a natural result of the conditions of arched architecture. The subject of windows being quite sufficient to occupy a separate lecture, I leave it for the present to go on with the more elementary questions resulting from the conditions I laid down at the outset.

You will have noticed that having in these prescribed conditions divided my subject into two general lines, I have been speaking of openings in walls, and between piers; and the resulting order of the spaces enclosed by walls or ranges of piers.—I have hitherto dealt exclusively with the former; and that, as the forms of piers and clustered columns are influenced as much by the requirements of the conditions of arched architecture as the resulting order of openings in walls, and between piers; I have been obliged to leave my description of their forms imperfect; and as it is my wish to treat of vaulting as systematically as I am able, I must beg you to allow this incompleteness to remain till it is incidentally filled up as we proceed with this, the second great elementary division of arched architecture.

It must be observed, on the most superficial glance, that the vaulting order of extended area is a matter of far greater intricacy and requiring vastly more thought and contrivance than the mere arching over of an opening in a wall; and, though its primary elements are simple, I must beg you to follow me over step ground,—and ground already trodden in my previous lectures,—because these early and simple steps are needful to the due appreciation of the more advanced and complex ones which we shall presently have to consider.

The simplest elements of vaulting are—first, the covering over of a rectangular space inclosed between parallel walls by means of a general cylindrical vault, usually known as a "barrel vault"; and secondly, the covering over a space inclosed by a circular wall, by means of a hemispherical vault or dome.

The first is the prolongation of an arch in a direct line at right angles to its plane; the second may be conceived as generated by the revolution of an arch upon its vertical axis.

I will keep, for the present, to the development of vaulting from the first of these types. We will first suppose that, while limited by constructive convenience to some moderate spans, we have occasion to vault over an area of double that width.

The most natural expedient which suggests itself is to divide the space into two widths by an arcade whose top ranges on a level with the springing of the vaulting, and on this and the outer walls to place twin and parallel barrel vaults.

This was a system at first largely made use of, as we may see in some of the covered walks or piazzas of the ancients, and in the galleries of the Colosseum. It is clear, however, that this is an imperfect covering for a single room or hall, not only from its severing it too much into two separate areas, but from its placing so much of

* See p. 160, ante.

the covering above the level of side windows, and thus practically reducing the available height of the walls; not to mention its heavy effect.

Let us see how these imperfections may be obviated.

The solution of the question may arise from a different and accidental cause. Let us suppose two corridors, each covered by a barrel vault, crossing each other at right angles. It is easy to see that these vaults must, by their intersection, generate angles running diagonally from corner to corner of the crossing of the corridors, and that these angles of intersection would assume curves of an elliptical form.

This square of intersection would in fact be found to be vaulted on a system previously unthought of.

Let us next suppose twin corridors, severed only by a wall, crossing two other such corridors, all similarly covered by barrel vaults. Instead of the simple intersection of our previous case, we now have a group of four, or two pairs of such intersecting vaults, meeting in the centre on a mere frustum of the partition walls reduced to a square pier, from whose angles spring four of these edges of intersection before described.

This, then, contains the solution of the problem under consideration, for, according to our first case of vaulting a hall of double width, we may, by repeating as many as we may need of these pairs of intersecting or "groined" compartments, such as we have generated by the last process, effect our object in a perfect manner; the vaults being all of equal height, and the width of each bay, for the most part, while the walls cease to be stunted of their full height, and room is left in them for windows reaching nearly to their top.

The same process may be applied to an area of any extent by repeating the ranges of piers, or limited to a single span or to a single compartment, as the case may be. The latter has the advantage of giving all the internal cubic space, and all the height of wall of which a vaulted area is capable; while, by concentrating the lateral pressure upon points at convenient intervals, where it may be readily resisted by external buttresses, it leaves the intervening wall-space free for windows pierced by windows, doors, or archways at pleasure.

The Roman builders usually strengthened their vaulting by narrow strips of brickwork or cut stonework from pier to pier, constructing the rest of inferior materials. Then groined vaults were similarly fortified at the lines of intersection, but, as the vaults were usually encased with plaster, these constructive expedients had no effect on the appearance. Sometimes, however, in their barrel vaults (as in the pincina at Bala, mentioned by Professor Willis, and in the corridors of the Colosseum), we find these strengthening strips appearing as ribs projecting downwards from the surface of the vaulting, and supported by projecting piers.

The application of this groined vaulting is an obvious step, and adds vastly both to its strength and beauty. Let us suppose a length of vaulting so divided; we find at once that we are getting into a very rightly system, and one susceptible of excellent architectural treatment. Let us then, before proceeding to more advanced or intricate developments, apply to what we have reached the same process of architecturalisation which we have gone through for mere arching.

Now, so far as relates to a barrel vault, it is evident that when divided by transverse ribs these may be carried by pilasters or by columns, but, as the order of an ordinary arch, and if we further mould or otherwise decorate the ribs and continue the capitals as an impost along the springing line, we have given a very fair amount of architectural character to the simplest form which vaulting can assume.

To pass on to the simplest form of intersecting or groined vaulting, it is equally clear that for these may be substituted for the square piers which are its normal supports.

In my theoretical description of this form of vault, I supposed the springers which are next to the wall to rise directly from its face; but in practice it is better that they should rest upon projecting piers; and it is obvious that for these pilasters or columns may be substituted. The crypt under the Church of the Holy Trinity at Cœa is a good example of this class of vaulting. When we apply the transverse rib to this vaulting we give it at once a strictly architectural character, as every compartment is now distinctly defined.

The complete plan of the springer upon a

detached pier now takes the cross form, suggesting the substitution of a cluster of four shafts round a square, or of a larger column, with a capital broken into the cross form. Where, however, the weight to be carried was small, as in crypts whose vaulting supported only the floor above, the enlargement of the pier effected by making the ribs die out at their springing one into another, and the groin to commence a little higher up; or sometimes by the awkward expedient of making the outer curve of the rib eccentric with the inner one.

Where we have already clustered pillars carrying a main arcade, the presence of vaulting on either side adds a new member to the pier, both behind and in front; and if, as is usual in churches, the central vault springs from a higher level, the additional shaft on that side runs up through, or rather by, the capital of the pier till it reaches the higher springing, thus emphasising the division of the bays throughout their entire height. This multiplication, however, of shafts is by no means essential, as the ribs may be brought, by a little management, on to the capital of a single column, which supports the arcade, and on their other side shafts may be carried up upon corbels to receive the higher groining.

It is hard to say enough upon this simple case of groined vaulting to show that it may be made both the source and the vehicle for architectural treatment of a most reasonable kind; and, as you will readily imagine that its ribs and their supporting capitals, corbels, and colonnettes, may receive any amount of sculptured enrichment, and that the surface of the vaulting may be decorated in the form of painting or mosaic work, I will here close my lecture, hoping that, though its subject matter may have appeared somewhat dull and its arguments almost self-evident, it may, nevertheless, have placed simple and familiar facts before you in a form more suggestive of the truth than any other. I have, I am sure, presented themselves; and that, like the definitions and axioms of Euclid, it may be serviceable in preparing the way for more intricate and less obvious matters of consideration which I shall have to bring under your notice while following out, in my succeeding lectures, the principles of vaulting into those other, though not less important, and which become so important an artistic element in the subsequent developments of Medieval architecture.

MASONRY: DESIGN AND CONSTRUCTION. THICKNESS OF MORTAR JOINTS IN MASONRY AND BRICKWORK.

The following remarks were commenced in reply to a question in the *Builder* as to the advantages, or otherwise, of thick or of thin beds of mortar.

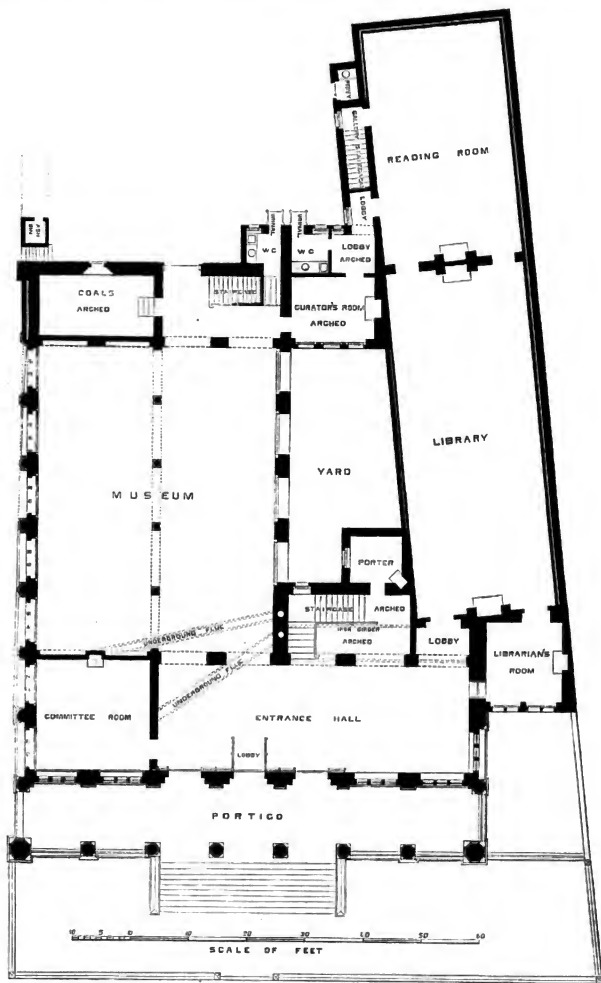
The quality of mortar which may be safely and with advantage be used with bricks, must in a great degree depend upon the quality of the mortar, and the purpose to be served by the brickwork. Some mortars swell (expand) in use; others shrink. The best samples of mortar in setting become hard and tough; poor samples remain soft, and crumble on exposure. A thin bed of the best mortar for such a work as a thick chimney would not be so strong as a thick bed, because in a thin bed there will be parts where the best bricks will be in contact, even where $\frac{1}{2}$ in. thickness of bed may have been specified for, and this thickness of bed and joint may show on the face of the work. With common bricks, a bed of $\frac{1}{2}$ in. of mortar will leave rough projecting portions of the bricks in contact. Good mortar, when set, is, as we have just said, hard and tough; and to secure the whole strength it is capable of giving the entire bed and joint must be full, so that the whole area of beds and joints of bricks shall be cemented by intervening mortar. Bricks and tiles of the best kinds, and mortar composed and used by ancient Roman builders, appear to be indestructible under any ordinary action of the elements. Samples of Roman masonry—rubble and brickwork—occasionally dug up in London, and at other Roman sites in England, do not show any signs of decay, and in their original structures remain sound and firm, with the exception of mutilations purposely made, wantonly or during war, in attempts to utterly destroy them. In these old works and ruins the proportions of mortar are usually about one-third, and sometimes one-half. The best rubble-work now consists of one of mortar and grout to three of stone, and the soundest rough brickwork, as in bridge-abutments and retaining-

walls, one of mortar and grout to four of bricks. There are arches of Roman work constructed of flat tiles set in beds of mortar almost, if not quite, as thick as the tiles, and those structures which have been destroyed by man (probably in war) show sound fractures and materials undecayed.

The strongest work at the Liverpool Docks is the granite rubble, consisting of one of mortar and grout to three of stone. The late Jesse Hartley, during the last twenty years of his life and practice, constructed dock and river walls of granite rubble masonry. The first twenty years he used ashlar masonry, hewn to an exactness and truth such as no other engineer ever obtained; the blocks of stone varying from 20 cubic feet up to 300 and even 300 cubic feet. These blocks were set, stone and stone, over the entire areas of beds and joints, the backing being rubble. It is, however, the rubble backing which gives strength and endurance; and this will be sound when the ashlar has been crushed, or has decayed.

If these remarks are read by any young architect who wishes to construct cheap, sound, and enduring works, we recommend rubble to his notice for heavy masonry works, and for brickwork thin, hard, and well-burned bricks, set in the strongest mortar. Even for public buildings the rule holds good, as at Windsor Castle, where the rough-faced wall-stones are set with thick beds and joints of good mortar, stuck with specks of flint. Compare the resistance of this work to atmospheric influences with the masonry at Westminster in the House of Parliament, and the masonry of Windsor Castle will be sound, in their rough strength and beauty, long after the elaborately-carved stonework of the Westminster Palace has mouldered away. The cost of the two sorts of masonry is very different, probably as one to five, and in some cases one to ten, the rough work being considerably cheaper.

With regard to masonry and brickwork construction generally, very much more may be said, and especially about design. The "five orders" continue to be the alphabet for one set of architects: Gothic is the style chosen by another set, the Renaissance and the Elizabethan style of architecture is being revived by a third set. Modern club-houses, public offices, and private residences give us rusticated basements, windows with pediments beneath string-courses, and heavy cornices which bolts and cramps can only keep in place. Columns should have something to support which could not otherwise be supported. Pilasters should give strength where it is required; pediments, string-courses, and cornices should act as protections from the weather, and ought not to be present where it is impossible for this purpose to be served. Rusticated ashlar masonry is not necessarily stronger, by reason of the amount of projection given to the face, as the true strength is in the thickness of the work, of workmanship, and in the care and mode of setting. If the breadth of bed to ashlar masonry is cut away to form a deep rustic joint, then is the work so much weakened by the process. With respect to design and construction in masonry, will one architect consent to design a public building in an original manner, regardless of all example and precedent, and not use the same ornament or ornament which does not grace construction and is useful? Let him think over the purpose or purposes to be served by pilaster, rustic, column, pilaster, architrave, pediment, impost, arch, key stone, balustrade, string-course, cornice, and every other detail, and he will find that all is not as it seems to be sufficient. Ample scope for ornament may be found in the useful, and it will then be discovered that economy and power of endurance are on the side of that which is useful, and also that consistent decoration is most beautiful. Masonry will then be in keeping, as there will be in the breadth of Old Westminster Palace, consisting of rubble, shamed fold structures of endurance; and the noble massing and fine outlines of Windsor Castle would not be improved by converting the walls into finely-tooled or polished ashlar masonry. London smoke, dust, and dirt soon disfigure hewn ashlar, which is deeply rusted, and elaborately moulded; and carved masonry, such as that executed at the new Houses of Parliament, must inevitably and rapidly decay. The Windsor Castle coursed wall-stone is dirtied, but is not decayed as hewn moulded and carved masonry is. Thin courses of hard wall-stone and thick beds of good mortar last longest, even in palaces and in churches.



THE PHILOSOPHICAL INSTITUTION, BRISTOL.
Plan of Ground Floor.



THE PHILOSOPHICAL INSTITUTION AND LIBRARY, BRISTOL.—Messrs. FORTES & FORTES, ARCHITECTS.

THE PHILOSOPHICAL INSTITUTION AND LIBRARY, BRISTOL.

The building for these amalgamated institutions, at the top of Park-street, close to several other important edifices, is progressing towards completion, and in our present number we publish a view of it, and the plan of ground floor. In our volume for 1869 we gave some particulars of the construction.* Messrs. Foster & Foulton are the architects, and Messrs. War & Burton the builders; the amount of the contract is 10,000*l*. Farley Down red stone is used for the exterior. The style is French Gothic. A flight of steps, 32 ft. wide, leads to an open portico, having columns, with carved capitals and bases, from which spring seven pointed arches. The portico is laid with Coalbrookdale tiles, and is built throughout of freestone. The front wall is divided into the same number of bays, each one corresponding in dimensions with the arch which faces it. The three middle ones are devoted to doorways, and the remaining four to windows, the right the entrance-hall and offices. These windows each consist of three lancet-headed lights, surmounted with a tracery light, the whole inclosed in a pointed arch, resting on carved shafts, with foliated capitals. Passing through the entrance-doors (which slide on iron rails) we get into the entrance-hall. This is a commodious room to the left, and directly in front of the entrance is the door to the ground-floor museum. This is a large apartment 22 ft. in height. Running down the middle of the room is a series of octagonal freestone shafts, from which spring arches for the support of the roof above. The room is lighted by five windows on the Baskerville-road side, of geometrical tracery, exactly the same as those described in the front, and four on the opposite side, which looks into a small yard. From the entrance-hall access is also gained to a spacious library, and a reading-room, librarian's room, curator's room, and all necessary offices. The reading-room and library are lighted by means of a lantern roof. The height from the ground floor to the eaves of the lantern is 36 ft. A gallery runs round both rooms, communicating with a ladies' reading-room, and on the same level as a mezzanine floor. A flight of steps from the entrance-hall takes us to the first floor, which is devoted to a larger museum, covering an area of 4,804 square feet, and 24 ft. high.

MR. PEABODY'S GIFT.

The statement of the trustees for the year 1869 has been issued. They now possess, under the first trust, four groups of buildings, situated in Spitalfields, Islington, Shadwell, and Westminster; providing collectively accommodation for 498 families, irrespective of the rooms assigned to the superintendents and porters. A fifth range of four blocks at Chelsea of somewhat different construction, affording tenements for sixty-eight families, is approaching completion. The tenements are of one, two, and three rooms, and the weekly rent varies from 2s. 6d. to 5s. 6d. according to the number of rooms and desirableness of location. The trustees also possess a site at Bermondsey not yet built upon. At all the buildings except Shadwell there is an increasing demand for dwellings in excess of the accommodation. Under the trust the trustees have procured land at Brixton, Chelsea, and Southwark. The sum total of the gifts to the two trusts amounts to 600,000*l*.

SIN.—The Peabody Buildings at Islington, containing 155 tenements, cost 31,690*l*. Are these figures correct? If they are, I think there has been great loss or extravagance somewhere. These 155 tenements consist of what is known as called "dwellings" of one, two, and three rooms, the greater portion, namely 104, having only two compartments.

Now, sir, 155 into 31,690*l*. gives a cost of 206*l*. to each tenement, or about 99*l*. per small room. It does not require any very intimate knowledge of the building trade to know that six-roomed houses can be built for 160*l*. apiece, which gives about 27*l*. per room, instead of 99*l*. How is this startling difference to be accounted for? The rental of the Peabody tenements is about 2s. per week for each room, producing, if all, something like 100*l*. per annum, from which income deductions must be made for interest on the purchase-money of the land; or,

in other words, ground-rent, repairs, rates, and taxes, depreciation of capital, and management, to say nothing of losses by defaulting tenants. It will, then, be seen that the outlay will barely pay 3*l*. per room, although the rentals are about that usually paid in ordinary houses; for instance, six-roomed houses are let at from 8*l*. to 10*l*. per week, being about 1*l*. 8*l*. per room, which will pay the owners 9 per cent. If the committee are satisfied in receiving 2 to 3 per cent. for the money invested, they ought to be able to let rooms, say 10 ft. or 12 ft. square, at 11*l*. per week, instead of 2*l*. As a proof, take 6-roomed houses built in blocks of four, with one large wash-house attached. The cost of building each, say 160*l*. at 2*l*. per cent. equal to 4*l*. ground-rent, say 2*l*. 15*l*.; rates and taxes, repairs, depreciation, &c., 7*l*. 10*l*.; making 14*l*. 5*l*. per annum, equal to six rooms at 11*l*. per week.

Pretuming the foregoing calculations are correct, allow me to ask you whether the poor of London would not be more benefitted by being provided with rooms at less than 1*l*. per week in ordinary houses, than by paying 2*l*. for the same accommodation in large buildings?

Arguments may be used in favour of large blocks of buildings containing several floors, because it contains the space, and thereby saves the land in ground-rent. This argument however, will not hold good as regards the "Peabody" dwellings; for it will be seen that the cost of the Peabody block was 31,690*l*. 5*l*. 6*l*., the interest of which, taken in the shape of ground-rent, and apportioned to 323 rooms, or to dwellings of six rooms each, would be equal to about 8*l*. per house, which is a monstrous rent, there being plenty of land to be had at 2*l*. 6*l*. or 3*l*. 6*l*. per foot, which would not exceed 4*l*. per house for a sufficient depth (four or five blocks) as would give a larger proportionate extent of yard or play-ground than falls to the lot of the tenants of the Peabody Buildings.

Wm. FAIRCE.

THE LATE MR. WILLIAM BURN, ARCHITECT.

We record with regret the death of one of the oldest members of the profession, Mr. William Burn, which took place on the 15th of February, at his residence, 6, Stratton street, Piccadilly. Mr. Burn was born in Edinburgh in the year 1780, and commenced his professional career in the office of the late Sir Robert Smirke, where he was associated with some of his principal works, and in particular with Covent Garden Theatre (destroyed by fire), the erection of which he personally superintended, returning to Edinburgh, he succeeded to the business of his father, which he greatly extended, and steadily matured into the most extensive and influential connexion in Scotland. In the year 1844 he removed to London, and from that period up to the time of his death his career was one of continued success.

Mr. Burn's speciality was Domestic Architecture, and he possessed to a very remarkable degree skill in planning. His plans for private houses have the reputation amongst those who know them of being models of simplicity, compactness, and convenience. His works are very numerous: we may allude briefly to Stoke Newington, Lincolnshire, for Mr. Christopher Turner; Beseby Abbey, in the same county, for Mr. James Banks Stanhope; Lynford Hall, Norfolk, for the late Mr. Lyne Stephens; extensive works at Hatfield and Portlith, for the Earl of Westminster; and at Knowsley, for the Earls of Derby; Dartrey, for the Earl of Dartrey, and Castlewellan, for Earl Annesley, both in Ireland; the New club, Edinburgh; Buchanan House, near Glasgow, for the Duke of Montrose; Montague House, Whitehall, and numerous works at Dalkeith, Bowhill, and elsewhere, for the Duke of Buccleuch; as illustrative examples of his very extensive private practice.

Mr. Burn for some years held the appointment, under Government, of consulting architect for Scotland, and performed the somewhat thankless office of a judge in the competition for the new Government offices.

Mr. Burn had a great objection to publicity, and resolutely prevented, so far as was practicable, the publication of any of his plans; not alone because of wish to avoid criticism, but on the acknowledged grounds that he saw no reason, — great mistake, — why he should enable others to derive advantage from them. The result is that his name is much less known than that of most of his contemporaries, in proportion to the magnitude of his works; and it can scarcely be claimed for

him that he did much to advance the general progress. This, however, is not the best occasion to take exceptions: we may find another. Suffice it to add that Mr. Burn was a man of ability, and in his own circle was greatly esteemed. He was buried on the 19th ult. at Kensal Green. Mr. Burn is succeeded in his practice by his nephew and partner, Mr. J. Macvicar Anderson.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

Page in Travelling Studentship.—Ten candidates submitted drawings and testimonials for the Page in Travelling Studentship, and the council have elected Mr. Ernest C. Lee, of 19, Great James-street, Bedford-row, as the Page in Travelling Student for 1870. The council spoke well of the drawings of three other candidates, viz., Messrs. W. Scott Champion, W. Henman, and W. Penstone.

Revision of Practice.—Attention was called to an Appendix (No. 3) in the printed Parliamentary Report on Hungerford Bridge and the Wellington-street Viaduct, headed "Papers handed in by Mr. Cole, C.B., 3rd May, 1869," and containing certain recommendations in regard to professional practice much at variance with the present system sanctioned by the Institute.

After some discussion at a special meeting, it was

Resolved:—"That the consideration of this subject be referred to a committee consisting of the vice-presidents and honorary secretary, with power to add to their number."

The Royal Academy Exhibition.—The correspondence which passed between the council and Mr. Sydney Smirke, R.A., on the subject of the accommodation provided for architectural drawings at the Royal Academy Exhibition, has been taken into consideration. In his last letter Mr. Smirke stated that the Booth-eastern Gallery at the Royal Academy (41 ft. by 31 ft.) was set apart for the exhibition of architectural drawings; and, in the event of spare wall space being left, for such water-colour drawings as would not interfere with the effect of the other works exhibited in the same Gallery.

After some discussion it was

Resolved:—"That the council be instructed to acknowledge the courtesy of Mr. Smirke, and to request him to bring under the notice of the Royal Academy the importance of leaving to its architectural members the selection of drawings sent to the Royal Academy for exhibition, which course, if adopted, would, in the opinion of this meeting, meet the wishes of the architectural profession generally."

It was further

Resolved:—"That this Institute invite its members to do their utmost to promote a good architectural exhibition at the Royal Academy this year."

Architectural Art Classes.—It has been resolved—

"That a donation of 50*l*. be contributed, out of the funds of the Institute, towards the maintenance (and first year's expenses) of the Architectural Art Classes now in course of formation under a general committee of management."

These classes will meet, we have already mentioned, at the Architectural Museum, Westminster.

SINAI AND CUP MARKINGS.

In the course of a lecture at the Royal Institution, on Friday, the 25th ult., by Captain Wilson R.E., on the results of the recent Ordnance survey of Sinai and the adjacent wilderness, the lecturer said that in various parts of the wilderness were to be found great numbers of clusters of small stones, generally 21 in the shape of beehives, having walls which began to taper in at the height of 2 ft. from the ground. The interior of these houses is left perfectly rough, and the projecting angles of the stones must have been a fertile source of annoyance to the inhabitants, wherever they may have been. The doors are small apertures, generally 21 in the shape of triangles, and the Bedouin tradition is that they were built by the children of Israel to protect them from moaquim, which were sent as a punishment to them. There were also large numbers of stone circles, which were places of sepulture. In the centre of rings of stone, bodies were found in situ, interred after the manner of the most ancient interments discovered in these islands, namely, the body very much contracted and lying on the left side. The stone circles varied in size from 10 ft. to 45 ft. in

* Vol. xxvii, p. 710.

of the web-footed netter—their blood dyed the Sacramento river.—In California, the other day, a number of shoemakers, being told that their wages must be reduced, struck; but not desiring to remain idle and eat up all their savings, and finding that there was no work to be had in the shops, they held a meeting, organised a co-operative society, raised funds, and immediately rented rooms, purchased stock, and commenced work for themselves, and in a very short time, it is said, will be able to give employment to persons who are not stockholders in the society.

FROM IRELAND.

Dublin.—An application is being made, it appears, to the Attorney-General, to grant a patent for a new theatre. The promoter of the enterprise are the Messrs. Gonn, music publishers. As they intend their theatre to be specially devoted to operettas, vaudevilles, and light comedies, a class of dramatic entertainments rarely presented on the Dublin stage—they will not interfere with any existing interest. A small, comfortably appointed, and well-conducted house, in which light and sparkling pieces will be presented by cultivated artists, has long been a desideratum in Dublin. The site chosen for the new theatre is in Great Brunswick-street. **Ballymena.**—Sir Shafto Adair, who owns a large estate in and near Ballymena, and who has always shown great interest in the improvement of his property, has presented to the inhabitants of Ballymena a "People's Park" of fifty-five acres. Sir Shafto further proposes to inclose and ornament the park, at an estimated cost of 1,500*l*.

LONDON, 1869.

ACCORDING to the Registrar-General's report it appears that the rate of mortality per 1,000 for the past year was 24.66; that of males being 27.01, and that of females 22.61. The population is estimated at 3,170,754, consisting of males 1,478,810, and females 1,691,944. The number of deaths was 77,993, consisting of males 39,912, and females 38,121. The number of births was 111,930, or 66,876 males, and 55,054 females. The population was increasing annually between 1851 and 1861, at the rate of 1.73 per 1,000. Scarlet fever, whooping cough, and diarrhoea were the reigning epidemics of the year; and of them 15,258 deaths were due. "Howard's devotion to the criminal population," remarks the Registrar, "rescued them from the hands of fever, and our prisons are now models, which only excite regret that their favourable sanitary conditions cannot be placed within the reach of honest labourers." The average mortality for thirty years of the five regions of London ranges from twenty-three in the north and twenty-three in the west, to twenty-five in the south, twenty-five in the central, to twenty-six in the east districts. In the year 1869 the mortality exceeded these averages everywhere except in the west districts and South London, where the effects of drainage are manifest. The mortality was at the rate of 28 per 1,000 in the east districts.

SCHOOL-BUILDING NEWS.

Manchester.—The Fallowfield new schools have been inaugurated. The schools are located on a site in Fallowfield-grove, and form a magnificent building, the style of which is, in the main features, Gothic. The interior measurements of the schoolroom are 55 ft. by 23 ft. The ground-floor is divided into six class-rooms, of which the two central rooms, one on each side of the main corridor, are the larger, being 21 ft. by 15 ft., and the others respectively 15 ft. 6 in. by 12 ft., and 16 ft. by 9 ft. A partition divides the upper floor into two large schoolrooms, with separate entrances, one for boys and the other for girls; but the partition will be easily removable, so as to convert the floor into a hall, occupying the full extent of the building. It is estimated that good accommodation will be provided in the schools for 300 scholars. The architect is Mr. Ernest Bates, and the cost of the building is said to be about 1,000*l*.

Chichester.—A new schoolroom has been erected in Cadogan-terrace for the Belgrave Freshyrian Church School, and has been opened by public meetings. The buildings occupy a site over the Metropolitan District Railway, and provide, on the ground floor, in the rear, a schoolroom, 43 ft. by 27 ft. by 25 ft. high, with a gallery at one end

for the convenience of the elder scholars and infants, whose class-rooms are on the first floor in the front building. It has an open roof, with iron ties, struts, &c., and a large lantern in the centre, by means of which effectual light and ventilation are obtained. At the platform end of the room the angles are cut off to provide the necessary W.C. and other accommodation, and also to secure uninterrupted light over the same for this end of the room. In the front building, which faces the street, two class-rooms for elder scholars, and one for infants, are provided; also sitting and reading rooms for the students, a kitchen, and coal-cellar. There is a stone staircase to the upper rooms, and beneath the same a librarian's closet. The front is faced with white Suffolk bricks, with red arches, cornices, &c., into which black bricks are occasionally introduced; and an inscription in tiles bearing the name of the school is to be placed under the first cornice. All the internal woodwork is stained and varnished, and the walls of the school-rooms are covered with Portland cement. The whole has been carried out at an outlay of about 1,250*l*, by Messrs. Scrivenner & White, under the superintendence of Mr. T. Hergate Vernon, whose design was selected in a limited competition.

Coley, Reading.—A new school building has been opened here. It contains accommodation for 400 children. The estimated cost of the building was about 600*l*, exclusive of site (old St. Mary's workshops 300*l*). Mr. Smith of Reading, was the architect; and the contractor was Mr. Simmonds, also of Reading.

PROVINCIAL NEWS.

Nantwich.—The foundation-stone of some new almshouse at Nantwich has been laid by Miss Tollermeach. The site is at Welsh Row Head. The builder is Mr. James Parker, of Beerton. The six old houses were so many hovel, only consisting of one room each, as a dwelling for all purposes. They were built and endowed by Mr. Tollermeach's ancestors, the Wilbrahams of Woodbay Hall, about 200 years ago. The new cottages, six in number, will consist of a lower floor, and a second story, having two sleeping-rooms, 14 ft. by 10 ft., and 10 ft. by 8 ft. On the bottom floor there will be a kitchen, measuring 12 ft. by 8 ft., a chamber 8 ft. by 8 ft., a pantry 7 ft. by 6 ft., and outbuildings.

Talyghar.—Recently two or three meetings have been held at the magistrates' room, the vicar presiding, to consider the propriety of erecting a new market-house, the present one being too small, inconvenient, and in a dilapidated condition. The scheme has been talked of for some time past, but, owing to the difficulty of procuring a suitable site, nothing could be done. This difficulty has at last been surmounted by the gift of Lord Ashburnham of a suitable situation in the centre of the town. Mr. R. Davies has received orders to prepare plans for the building, which is to be 47 ft. long by 27 ft. wide, with a spacious room over it, to be used for concerts and other public meetings. The scheme is proposed to be carried out by a company, with 250 2*l*. shares. The town has been improved of late.

Books Received.

"THE Appropriation of the Railways by the State. By A. J. Williams, Barrister. Cassell, Petter, & Galpin." This is a people's cheap edition of Mr. Williams's proposals for the conversion of the railways into roads and public highways. "The Railway. Banking, Mining, Insurance, and Commercial Almanac for 1870. Edited by W. P. Smith. Simpkin, Marshall, & Co." This is much more of an annual review of the material interests of the United Kingdom, as, indeed, a sub-title calls it,—than a mere directory. It gives a variety of information useful to the merchant, manufacturer, and the general public, with notices of coal, iron, metal, cotton, &c. The book contains reviews of some long shipping paper, so expansion and social and sanitary requirements; railways; the iron trade; trade and finance of 1869, &c.—"The Animal Kingdom: an Elementary Text-book in Zoology. By Ellis A. Davidson. With illustrations. Cassell, Petter, & Galpin." This illus-

tration is specially classified and arranged for the use of science classes, schools, and colleges. It makes an interesting little volume, and is well illustrated by engravings.

Miscellaneous.

Glasgow University Buildings.—It is expected that, although not perhaps finished in all respects, the new buildings will be ready for occupation by November. The university has frontages to the north, the south, and the east, with, at the west end, a row of professors' houses. In the centre is a spacious quadrangle, divided into equal parts by the great hall, running from north to south. The foundations of the great hall have been laid, but the superstructure yet remains to be erected. The main front of the university is to the south, with, in the centre, a tower, which is to rise to a height of 300 ft. from the ground-line. Externally this front is completed, with the exception of the tower, which is to be built in the style of a central wing. Four shafts will be led from the top of the central tower, down which the air will be drawn to a capacious air-tube running underneath the quadrangle. At the mouth of this subterranean passage is a large fan, which will serve the double purpose of sucking the fresh air from the top of the tower, and passing it into the tube at the bottom. Along the air-passage are a series of openings leading into chambers furnished with metal pipes, and communicating with the apartments above; and, by means of boilers which are fitted up in various parts of the building, these metal pipes in cold weather will be supplied with a constant stream of hot water. In all, thirteen self-contained dwellings have been provided, but this is only half the number of professors connected with the university. The contractor for the buildings is Mr. John Thomson. Professor G. G. Scott, our readers will remember, is the architect.

Society for the Encouragement of the Fine Arts.—In the 24th vol. of the exhibition of paintings of James Ward, R.A., including the celebrated "Mill," painted in 1805 in emulation of a similar picture by Rembrandt. Mr. G. R. Ward occupied the chair, and there was a very large attendance of artists and others interested in art to do honour to the occasion. Mr. G. R. Ward, in his address, said, "I have the address, in which, after paying a graceful compliment to the different members of the family present,—all of them distinguished artists,—and some brief allusions to his first acquaintance with James Ward, R.A., he declared that for truth, force, and accuracy, and the faithful delineation of the animal and human form, the English school had surpassed him, one or two of his works being rivalled only by those of Paul Potter, added to which he was eminently skilled in landscape painting. Mr. G. R. Ward said his father obtained his first reputation as an engraver, his Corsica, after Rembrandt, having been pronounced by a competent authority the finest work in mezzotint ever produced in England, but that in order to become a Royal Academician he gave up engraving, his first important work being the horse Adonis (belonging to George III.) attacked by a box-constructor,—a painting rejected by the Royal Academy, but which made the fortune of its exhibitor in America.

Sewer Ventilation.—Mr. John Kennett has been lecturing at Eastbourne on this subject, with reference to a patented invention of his own,—a modification of the furnace principle, in which the town lamp-posts and lamps are made use of, one half as open shafts and the other as downcast shafts. In the present burning of the coal-gas in the lamp creates a vacuum, the point of combustion, consequently the air from the sewer is immediately drawn into the light and becomes decomposed, and supposing that the lamp draws no more air from the sewer than is necessary for the support of combustion, then the whole of the sewer gases pass through the light, and in the lamp create a vacuum, so that no air can be consumed, then the whole being warmed from 30° to 60° by the burning gas, or from 20° to 30° by the radiant heat of the sun (which is absorbed by the glass lantern) above that of the external atmosphere, the molecular condition of the air is altered, being dried, diluted, and then forced upward without creating a nuisance. The heat is transmitted into work, and "the current of the main body of the sewer air is diverted from the dwellings."

The Grand Stand Accident at Cheltenham.—After three years' tedious litigation, a judicial decision has at length been given in the case of Francis v. Cockrell, the question at issue in which was the liability or otherwise of the defendant, as a member of the race committee, for the damages sustained by the plaintiff, who was one of those injured by the fall of the grand stand at Cheltenham races in 1867. As this case might to some extent be taken as a precedent, it has been very fully fought. Originally, it stood for hearing at the Gloucester Midsummer Assize following the accident, but on its being called on a reference was made by consent to Mr. J. O. Griffiths to find as to facts. Several months elapsed before the special case was drawn up, and it was not until last July, more than two years after the mishap, that it came on for argument in the Court of Queen's Bench. Judgment was then reserved, and after another six months' delay the decision of the Court was delivered on Monday, the Lord Chief Justice, Justice Mellor, Justice Lush, and Justice Hannen sitting in Banco. Justice Hannen delivered the judgment, in which he reviewed a number of cases bearing on the law. The result was that the authorities appeared to be in favour of the plaintiff, on the ground that a person entering into an implied contract for safety was not excused simply because he had employed a competent builder. Judgment was therefore pronounced for the plaintiff.

The Equalisation of the Poor Rates.—Mr. Goschen's Bill in the House of Commons proposes to place half the expenditure of the metropolis for poor relief on the Common Fund. That is, the half of 1,400,000. This is a great step towards an equitable distribution of the cost of the metropolis poor on the ratepayers. A grant of 3s. 6d. per week for each inmate is to be allowed out of the Common Fund. To that fund fifteen parishes contribute, and twenty-four draw upon it. Medical officers, relieving officers, and paid nurses will be increased in number, but nothing will be done to assist out-door relief from the Common Fund. To prevent guardians giving as much relief as possible within the workhouse, a limit will be placed upon the number. The proposal demands the earnest attention of the metropolitan members. At the last meeting of the Marylebone board of guardians notice of motion was given by Mr. H. C. Tuckwell, as to the 3s. 6d. per inmate, giving as much relief as possible within the workhouse, a limit will be placed upon the number. The proposal demands the earnest attention of the metropolitan members. At the last meeting of the Marylebone board of guardians notice of motion was given by Mr. H. C. Tuckwell, as to the 3s. 6d. per inmate, giving as much relief as possible within the workhouse, a limit will be placed upon the number. The proposal demands the earnest attention of the metropolitan members.

"That it will be a great cruelty and hardship to the most respectable poor, to whom alone the house is a test, by breaking up their homes, and destroying the remains of self-help, and leaving those who decline to enter the house to die of slow starvation. That recent improvements in dietary, ventilation, warming, and general comfort in workhouses render them no longer a test as to the worthless; and that if any allowance be given from the common fund, it should be given impartially to every admitter in respect of in-door or out-door relief. Surely this is a retrograde step of Mr. Goschen's. The time is past for adding to the hardships of the deserving poor, by forcing them into the workhouse, and sustaining it as a terror to the worthy rather than to the worthless, as he proposes to do.

Explorations in Palestine.—Captain Warren has recently been conducting explorations at the following points:—The district of Coon, Syria, has many important ruins of temples, which have nearly all their entrances towards the east; and their positions are similar to the temple of Jerusalem; and the ruins of the synagogues in Galilee have many points of resemblance. There is one peculiarity about some of these temples which appears to distinguish them from those of Europe. They are mounted on stylobates, and have a steep or staircase up to the entrance, and the only method of entering is by a small door opening from the side of the stylobate into the vaults underneath, and thence by some means into the temple itself; from this it would appear that only the priests went into the temple, or else that there was some temporary staircase up into the stylobate. The small temple about Hermon appears to be somewhat of more ancient date than those in the Bakti; they are of the Ionic order, and are in situ.

A New Opera House for Paris.—When there is a big house to let in Paris, it is sure to be turned into a theatre. The huge *Magnan Réunion* are about to meet their inevitable fate. M. Goussard has obtained permission to cover over the court-yard, and to convert it into an opera-house, where the masses are to be seated into the works of the great masters.

—Galignani.

Value of Land in Liverpool.—At a recent sale of corporation property in Liverpool, a small office and about 162½ yards of leasehold land (corporation lease of 75 years), situated in the old churchyard, Chapel-street, sold for 3,860l., being at the rate of 30l. 13s. 7d. per yard; and a block of 262 yards of unoccupied land in New-street, Victoria-street, realised 4,380l., being at the rate of 16l. 14s. 4d. per yard. An inquiry was held before Mr. J. J. Ansell, Q.C., and a special jury, to assess the value of one front house, let at 8s. 6d. per week, and two court houses, at 3s. 9d. each per week. Mr. Hornblower, Mr. Peter Ellis, and Mr. Wordley were called for the claimant, Mrs. Bartlett, their valuations being respectively 586l., 575l., and 622l., including 10 per cent. for compulsory purchase, and being calculated at about sixteen years' purchase. Mr. Colclough, Mr. Culshaw, and Mr. Scott, who were called for the Corporation, considered that the rents were excessive, and that, after deducting 20 per cent. for outgoings, the net rents would not be more than 30l., which they capitalised, one at thirteen years' purchase, and the other at twelve years' purchase. Mr. Colclough's valuation, including the 10 per cent., was 429l. Mr. Scott's being only 595l. The jury retired, and gave a verdict for 510l.

Official Expenditure in the Metropolitan Board of Works.—At the last weekly meeting of the Board, on bringing up the annual report of the Finance Committee, Mr. D. Rogers drew the attention of the Board to the very heavy charges which were being constantly made by the officers of the board for cab hire, and instructed one of the cabmen to be charged with the cost of the cab hire for the Fire Brigade. Mr. Colclough also complained that officers sent out on their duties were in the habit of charging for refreshments, and spent the time that ought to be employed in their duties in taking those refreshments, at the cost of the ratepayers. Mr. Richardson referred also to the charges made for coach hire for the Fire Brigade, and generally condemned the expenditure incurred beyond the ordinary expenses of the Brigade. After a long discussion, and an amendment that the report be referred back to the committee for further consideration, on a division the amendment was negatived by a majority of 17 to 13, and the report was adopted. Mr. Rogers, then, chief officer of the Fire Brigade, sent a letter requesting an increase of his salary. The application was referred to the General Purposes Committee.

A New Cab Register.—A new vehicle register, which has been invented by M. O. Vivier, a French chronometer-maker, and is intended to put an end to overcharges by the drivers of hired vehicles, is described in the London *International* newspaper. The register occupies but a very small space; it may be fixed inside or outside the carriage. It has two distinct parts—one for the guidance of the proprietor of the cab, the other for that of the driver and the public. The part which is intended to guide the public consists of a couple of dials, always visible, one of which indicates the number of miles travelled, and the other the fractions or subdivisions of the last mile entered on. A spring can be pulled which instantly sends back the hands to zero. There is a self-acting arrangement by which, when the carriage is empty, the register ceases to act. But would not such a register be apt to tempt cabbies to prefer long routes to short ones, for the purpose of increasing their fares?

Tewkesbury Water Supply.—The Cheltenham Water Company having nearly completed the works for the supply of water to the town, the last of Tewkesbury from the Sever, a public meeting, convened by the mayor, was held on Monday last, at the Town-hall, to arrange the terms on which the company should supply the water. Mr. McLaneborough stated that the company's charges would be 6 per cent. on the gross estimated rental of houses over 10l., with a small addition for the cost of the water so on. After an animated discussion of upwards of two hours, this resolution was carried:—

"That unless the Waterworks Company consent to supply the town at 5 per cent. on the rateable value instead of on the gross estimated rental, it is the opinion of the meeting that the inhabitants should continue to supply their present private supply for culinary and domestic purposes."

A second resolution was agreed on to the effect that the public should only pay for extras they really needed and used.

Salisbury Cathedral.—The report of Mr. G. G. Scott, R.A., on the restoration of the choir of Salisbury Cathedral as a memorial to the late Bishop Hamilton, is published. He estimates that the works will cost 8,500l., including the restoration of the stonework of the choir without the aisles or transepts, the screens and sedilia in the north and south-eastern bays with the tomb of Bishop Poore, the screens to the eastern transept arches, the restoration of the stalls and sedilia with new desk-fronts to the same, the Bishop's throne, the new pavement and floor, with the probable amount of the architect's charges, and the salary of the clerk of the works. The record he supposes to be given. The grilles behind the same will, he thinks, cost about 450l.; the pulpit, 300l.; the organ screen, and remodeling of the organ, from 3,000l. to 3,500l.; the incidental expenses, 1,000l. The plan shows that it is proposed to bring back the choir, with its arrangements and decorations, as nearly as circumstances will permit, to its original condition. It is in favour of opening out the choir to the nave, and considers an open screen a *chêne et* non.

Good Tunnelling.—A great underground work is the Ernst August Gallery—one of five belonging to a metal mine in the Harz. The month it is at Gitter, in Brunswick. It is 10 ft. high, 6½ ft. wide, and has a fall three-fifths of an inch in a yard. Like a railway tunnel (but it is twice the length of the longest), it was begun simultaneously at various different points, and finished in thirteen years. The gallery is 6½ miles in direct length; but if its lateral branches are taken into account, and an subterranean gallery, navigable for boats, which opens into it, the Ernst August Galleries are said to be not less than fifteen miles long. All the junctions of the different sections fit accurately into each other, the precision of the results having been partly insured by the aid of a magnet, weighing 500 lbs., which attracted the compass through the solid rock 65 ft. deep, and which was kept in one of the working-places, while the compass was held in the other.

Working Men's Club and Institute Union.—The council of this society, having always regarded the institution of discussion meetings at working men's clubs and institutes as an object of very great importance, both as a means of mental discipline and political education, and also as affording opportunities for persons of different occupations and positions in life to become better acquainted with each other's opinions and interests, propose to invite their members, as well as representatives of all classes and opinions, to meet from time to time at their office in the Strand for the discussion of questions in literature, sociology, politics, history, and ethics. A conference was held at the rooms of the Union, on Thursday, March 3rd, when the question of the proposed conference was presented to substitute the Metric Decimal System of Weights and Measures for those now in use?

Improvements in Locomotion.—Sir Joseph Whitworth, at a recent dinner of the Foremen Engineers, deprecated the use of horse trams as unsuited to the times. He further intimated his opinion that "mechanical engineers have a right to enter their protest, considering the many obstructions there have been for many years past to the employment of road locomotives." Sir Joseph thinks it quite possible to produce a small, light locomotive, which would work quickly and effectively for use on roads, but, as a preparatory condition, he recommends that the roads should be better made, and kept in a proper state of surface by the use of steam-rollers, steam-sweeping machines, and other appliances.

A Board of Conciliation and Arbitration for Liverpool.—The Liverpool operative leaders have held a preliminary meeting with the view of establishing a court of arbitration in Liverpool. The chairman of the trades' council presided, and the meeting was unanimously in favour of the object in view. A circular was agreed upon, inviting the co-operation of the employers. This circular has to be submitted to the trades' council.

Landscape Architecture.—In December last an advertisement appeared in the public papers, offering a premium of 30 guineas for the best plan for "Public Parks and Recreation Ground at Luton, in Bedfordshire." The premium was then awarded to Mr. J. H. Carrington, landscape architect, of Mile-end, near Stockport.

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7 ft. 6 in. by 2 ft. 6 in. by 6 in.	10 in. 12 in. 14 in. 16 in. 18 in. 20 in. 22 in. 24 in. 26 in. 28 in. 30 in. 32 in. 34 in. 36 in. 38 in. 40 in. 42 in. 44 in. 46 in. 48 in. 50 in. 52 in. 54 in. 56 in. 58 in. 60 in. 62 in. 64 in. 66 in. 68 in. 70 in. 72 in. 74 in. 76 in. 78 in. 80 in. 82 in. 84 in. 86 in. 88 in. 90 in. 92 in. 94 in. 96 in. 98 in. 100 in.	10 in. 12 in. 14 in. 16 in. 18 in. 20 in. 22 in. 24 in. 26 in. 28 in. 30 in. 32 in. 34 in. 36 in. 38 in. 40 in. 42 in. 44 in. 46 in. 48 in. 50 in. 52 in. 54 in. 56 in. 58 in. 60 in. 62 in. 64 in. 66 in. 68 in. 70 in. 72 in. 74 in. 76 in. 78 in. 80 in. 82 in. 84 in. 86 in. 88 in. 90 in. 92 in. 94 in. 96 in. 98 in. 100 in.	10 in. 12 in. 14 in. 16 in. 18 in. 20 in. 22 in. 24 in. 26 in. 28 in. 30 in. 32 in. 34 in. 36 in. 38 in. 40 in. 42 in. 44 in. 46 in. 48 in. 50 in. 52 in. 54 in. 56 in. 58 in. 60 in. 62 in. 64 in. 66 in. 68 in. 70 in. 72 in. 74 in. 76 in. 78 in. 80 in. 82 in. 84 in. 86 in. 88 in. 90 in. 92 in. 94 in. 96 in. 98 in. 100 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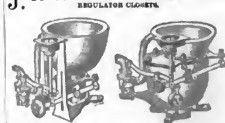


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Superiority has shown that this cheap fan is the most efficient and reliable, and that in strength, durability, and economy, it can be compared to the most expensive closets.

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VALVE CLOSET. FAN CLOSET.

Perfect flushing cannot, however, be the full of water; when in action, the escape of air is not so rapid as required; and often the water is not so clean as when the closet is not in use. These closets can be seen at work, and at various other places.

J. TYLOR & SON'S MANUFACTORY, 2, NEWCASTLE STREET, LONDON.

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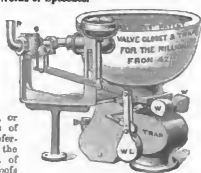
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JENNINGS'S IMPROVED PATENT DRAIN-PIPES

GEORGE JENNINGS, when originating his various SANITARY and BUILDING INVENTIONS, has always aimed to combine SIMPLICITY of CONSTRUCTION with FACILITY for REPAIR. Those who may inspect any of the Diagrams illustrative of his varied Manufactures, will readily perceive the intention of every detail, which any Workman (having the slightest pretension to Mechanical Ability) may understand at a glance with a view to FIX or REPAIR.



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now on the eve of completion,
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ence to **ECONOMY** in the
COVERING OF BUILDINGS
SLATING IS SAVED in every
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PROVEMENTS completed, or will appear in the columns of the ensuing Month, having reference to the
SUPPLY of WATER, in the (by which 125 feet super, of square covered), rendering Roofs MORE DURABLE, and from

the arrangement of the material, entirely IMPERVIOUS to RAIN, or INJURY BY WIND; and in cases of repair from the accidental breakage of a Slate or Tile, the same may be replaced without the slightest difficulty.

These improvements also extend to the covering of Hips and Ridges, to the flushing of Party and other Walls; to Terminals for Chimneys; WITH THE VIEW TO THE ABOLITION OF COWLS, AND OTHER UNSIGHTLY APPENDAGES; as also appliances for the treatment of Sewage, rendering DEPOSIT TANKS UNNECESSARY; and to carriers for the conveyance of Sewage, or for its distribution; to Earthenware Valves for controlling the flow and distribution of Sewage. These latter appliances have been, and are now being largely employed by Messrs. Lawson & Co. of 3, Westminster Chambers, in works under their direction, at Bedford, Tnbridge Wells, Ormskirk, Colney Hatch, and other important Sewage Irrigation Works. Also at the Hanwell Asylum, under the direction of H. Martin, esq. and by Mr. Trebeart, in the Epsom Sewage Works, and other Engineers.

Every information will be given by the Managers of GEORGE JENNINGS'S POTTERY and TERRA COTTA WORKS, the SOUTH WESTERN POTTERY, POOLE, DORSET, relative to the foregoing; or the same may be had at his LONDON SANITARY DEPOT.

In the limits of an advertisement it is impossible to do more than allude to JENNINGS'S IMPROVED PATENT BONDING AND AIR-BRICKS, Damp-proof Course, Chimney Throats and Terraces, Patent DRAIN PIPES and Telescopic Drain Pipes, Condensers, Terra Cottas, Arched Key Stones and Trusses, Tip-up Lavatories, Closets, Lipped Urinals, Pumps, Water-Waste Preventors, &c. But Architects specifying any of the foregoing, may depend the result will be most satisfactory to all concerned.

All the above may be seen in action at his SANITARY DEPÔT.

PALACE WHARF, STANGATE, LAMBETH.

**J. STONE & CO.'S PATENT "UNIVERSAL" BRASS REGULATOR
FOR WATER-CLOSETS.**

THE BEST AND CHEAPEST IN EXISTENCE.

THE PATENT "UNIVERSAL" BRASS REGULATOR contains all the advantages of the best Regulators of the day, including

Extreme Simplicity. Lubrication of Piston.

NOT AFFECTED BY FROST. WET. OR DAMP:

AGGURACY with which it can be ADJUSTED.

Together with the following additional advantages, viz.:

It is MUCH the CHEAPEST.

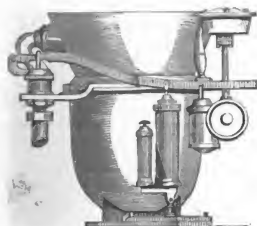
The Oil required for LUBRICATING the PISTON can be applied by merely unscrewing the top of the small Oil-chamber, without at all interfering with the Regulator.

Its Construction is such that it is next to impossible for it to get out of order.

Full particulars on application to

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ELEVATION OF CLOSET, WITH REGULATOR ATTACHED

FRENCH UNIVERSAL EXHIBITION, 1867. CLASS 65.

The only SILVER MEDAL given to GREAT BRITAIN specially for "POTTERY".
(Stoneware Pipes, &c.), for Materials and Processes for Civil Engineering and
Public Works, has been awarded to

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GLAZED STONEWARE DRAIN PIPES, TERRA COTTA CHIMNEY TOPS, &c.
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VENTILATORS are the cheapest and most efficient in use. Prices, including lock-down Iron Grate, Charcoal Tray, &c. all complete:—

8-inch, 20s.	9-inch, 40s.	12-inch, 80s.	15-inch Dia, 60s. each.
Duty and Ventilating Trap for Cottages, 2s. 6d. each.			

Registered Smoke-curing Chimney-Top, 50 each.
Batchelder's Patent Trough Chimney. Chimney Pipes up to 4 feet
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PIPER, &c.—Notice is hereby most respectfully given, that the LONDON DEPOT for this WARE is REMOVED to No. 21 Wharf Basin, N. Andly, that the Trade may be enabled to purchase at the lowest possible price.

term, "THERMO-METALLIC" is the exclusive right of the Frigicrete
and Selly, that the "Reports of the Jurors," page 581, of the Grand
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Manufacturers known as (and as "The Tiler") Trussell, Sheffield.

HATFIELD'S PATENT ROLLERS, for SLIDING DOORS, SHUTTERS, &c.

A GREAT IMPROVEMENT LARGELY USED IN AMERICA.



The advantage secured by this invention consists in an arrangement by which the Axle of the Roller runs on a Plane, instead of turning in a Socket. The rapid wear of Axle and Sockets in the ordinary Roller soon causes the door to settle on the Rail, and renders the Roller useless.

In the PATENT ROLLER the wearing away of surface is avoided, and the Permanence of the Support is secured, in addition to a remarkably easy movement of the Door, consequent on a minimum of friction in the working parts of the Roller.

MANUFACTURED BY

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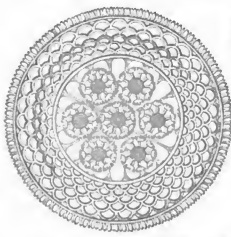
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This very ingenious and useful Machine can be easily worked by ONE MAN, and will perform TEN times the work of an ordinary Hand-Saw in a given time. It can also be attached to horse gear, so that a boy and one horse will cut a great quantity in a day. It will cut timber from $\frac{1}{2}$ inch to 3 inches in thickness, and from $\frac{1}{2}$ inch to 12 inches wide; and is SELF-FEEDING.

Machines to cut $4\frac{1}{2}$ inches thick are also made, and can be seen and tried at

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IRON ROOFS, WORKSHOPS, STORES,
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FOR ROOFS OR EXPOS.

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THE ORIGINAL SMITH'S PATENT

DOOR SPRING,

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Specified by Government in
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most durable.

SMITH & TURNER,
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Reference given of from forty to fifty years' continuous use.

ARCHED WATER-PATENT DOOR SPRINGS



ESTABLISHED
OF A
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CAUTION to ARCHITECTS and BUILDERS. Beware of cheap imitations of the celebrated INTERIOR and EXTERIOR ARTICLES known as the SMITH'S PATENT DOOR SPRINGS, WATER BARS, &c. SMITH'S PATENT WEATHER-TIGHT WATER BARS, and SMITH'S PATENT WATER-TIGHT CEMENT PATENTING for FRENCH WINDOWS. The above are well known and are the only ones that all GENUINE ARTICLES are stamped with the NAME AND ADDRESS, SMITH, Patents, 20, Barkingham Close, London, and such only are Warranted.

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An easy and natural
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Supplies this important
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Inventor, Mr. RICKETS,
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**RICHARDSON, SLADE
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was awarded to J. H. ROBERTS, at the Great Exhibition of 1861, who writes the following of his locks, in the words of the Jury: "The locks of all descriptions, including the most improved and the most perfect of all kinds, with Patent (Hill's) and the New Registered Ventilation Ventilator, so much admired, &c. &c. each." J. H. ROBERTS LOCKS, 18, BROWNLOW-ST., HOLBORN, W.C. are the only ones that all GENUINE ARTICLES are stamped with the NAME AND ADDRESS, SMITH, Patents, 20, Barkingham Close, London, and such only are Warranted.

RAIN WATER PIPES, GUTTERS, &c.

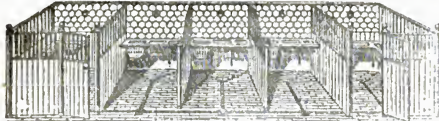
U. Rain Water Pipes... 1/2 in. to 4 in. in 100 yd
3 in. to 4 in. to 100 yd
4 in. to 100 yd
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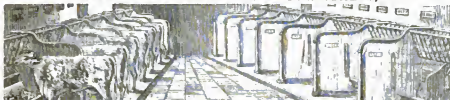
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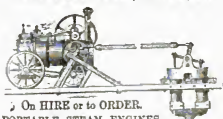


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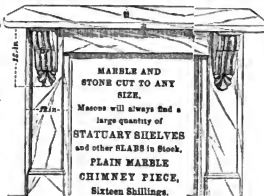
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VOL. XXVIII.—No. 1414.

Memorials of Temple Bar.



W HILE Temple Bar is, probably, the widest known of all the vestiges of Old London; at the same time, it is the least known. Striding in its present shape one of our chief thoroughfares, there are few strangers who do not speedily, and warily too, thread its narrow ways; and the Londoner must lead a warped life whose business or pleasure never brings him within sight of it. But for all that, few people know much about it. Not one a thousand knows, for instance, the use made of the chamber over the central archway at the present day; and we shall be speaking within bounds when we add

that not one in ten thousand is aware of the purpose it served in old times. There is, it is true, a general impression that the present structure is one of the designs of Sir Christopher Wren; and ever and anon the question of its destruction, or removal to some other site, is discussed and dismissed. The history of the fabric is, however, a wonderful, save in a limited circle. But now a citizen, who rejoices in being the descendant of other citizens, has stood forth as the historian, and, incidentally, the champion of the Bar, and in a painstaking and careful volume has noted most of the scenes and many of the people associated with it.* Somewhat of the jostle, bustle, rattle, and rumble of the crowded thoroughfare the building spans comes to us as we read, owing to the author's desire to include kindred topics and adjacent courts and alleys in his history, which introduces a greater number of figures into his picture than we should have chosen. But on clearing the ground around the main subject of his work, the history of Temple Bar can be thus read:—

In the reign of Edward I. (1301) a grant was made to one Walter le Barbour of "a void space in the high street in the parish of St. Clement Danes, extra Bartram Novi Templi." This is the earliest known mention of the famous gate between the City and the old court suburb. In the reign of Edward II. the inhabitants of Westminster petitioned that monach for a remedy for the bad state of the road between the palace and "la barre du Novel Temple de Londres." They declared they were greatly interrupted in their traffic by the mire in the rainy season, and by the thickets and bushes. In the reign of Richard II., Wat Tyler, at the head of his great gathering, is said to have destroyed the bar, as well as two forges, one on either side of St. Dunstan's Church. Thus we

gradually realise the roadway through the open country, with a sprinkling of houses along the way, here and there a glowing forge, and then long lengths of tangled hedges straggling over the trackway and narrowing it. But it is not clear that the bar took the form of a structural gateway at this early date; and it is possible that it was but a bar, literally, or chain stretching from post to post across the road. The first mention of a building on the site that Mr. Noble has been able to find belongs to the reign of Henry VII., and occurs in the records of the City:—

17 Hen. 7 [1503.]
*Broke Alder, despoiled and demolished
 the bar of the gate, the new gate, now set up at
 Temple Bar, to the city ten feet, dwelling byer unto
 the side gate, having the new lease order with
 byre, for the shutting and opening of the same gate at
 convenient hours.*

After this, the accounts of pageants and processions give us many glimpses of the Bar, always as a building, and nearly always as newly painted, repaired, or decorated, to meet the exigencies of the respective ceremonies with adequate state. Stow's description of the procession of Anne Bullen from the Tower to Westminster Abbey, on the occasion of her coronation, in 1533, says the bar was "newly painted and repaired" for the occasion, and that a group of singing men and children stood there to salute the young favourite. Again, when Edward VI. passed through the bar to his coronation, in 1547, we hear that it was "painted and fashioned with battlements and buttresses of various colours, richly hung with cloth of arras, and garnished with fourteen standards of flags; there were also eight French trumpeters blowing their trumpets, after the fashion of their country, and a pair of regals with children singing to the same." This procession was made the subject of a set of paintings long preserved in the dining-room at Cowdrey, in Sussex, which were attributed by some to Holbein, and by others, with more probability, to Bernardi, and which were unfortunately burnt in the great fire there in 1793. One of these paintings showed Temple Bar. We may see it, too, in Hollar's map, gabled, with a central gateway and two foot-passages, with the royal arms and those of the City set up over them.

When Queen Mary was crowned, the bar was again newly painted and hung; and when she was about to be married, it was resolved that a new pair of gates, that were to be good and substantial, should be set up there. Mr. Noble thinks it likely the former ones may have suffered in the rebellion of Sir Thomas Wyatt, who, it will be remembered, was taken prisoner by Sir Maurice Berkeley "by the Temple Barre." The City records set forth that the new gates were completed in the course of a few weeks:—

"1 & 2 Phil. & Mary, 20 Oct. [1555].
 Item it was agreed that Mr. Chansecler shall comitt the custody of the key of the new gates, now set up at Temple Barre, to the cyties tenet, dwelling byer unto the side gate, having the new lease order with byre, for the shutting and opening of the same gate at convenient hours."

Queen Elizabeth was the central figure of the next ceremonial in which Temple Bar was one of the chief stations. When she passed to her coronation through the leading streets of the City, and came to this boundary, she found the bar in possession of giants, who bore in their hands, above the gate, a set of Latin verses painted on a tablet, and a translation of them, on a smaller tablet, in "English meter." A group of singing children stood at the gate, too, as on former occasions; and one of these little ones, "richly attired as a poet" (Pope had not located the whole army of poets in Grub-street in those days) stepped forth, and bade her farewell, as she left the confines of the City for those of the Court. "Be well assured I will stand your good queen," he was reply. This queen revisited the citizens several times; and once with extra state, when she went to St. Paul's to return thanks for the defeat of the Spanish

Armada. The City wails were posted on this occasion on Temple Bar to salute her with minstrelsy.

Still more sumptuousness was exhibited when the King of Scotland made his entry into London to be crowned King of England. Ben Jonson, as poet, was among the workers who were employed to make his progress as royal as possible. A temple was erected against Temple Bar, 57 ft. high and 18 ft. wide, with a passage-way 12 ft. wide. It represented the Temple of Janus; and in it were Peace, with Wealth in attendance upon her, and War grolleling at her foot; while four handmaids,—Quiet, Liberty, Safety, and Felicity,—asserted dominion over Tumult, Servitude, Danger, and Unhappiness, who lay at their feet. As the king approached this edifice, the heart of the City was placed upon an altar within, and offered as a tribute. Gilbert Dugdale says of this structure, "It was neither great nor small, but finely finished. Some compared it to an exchange shop, it shined so in the dark place, and was so pleasing in the eye; wherein a young man, an actor of the citty, so delivered his mind and the manner of all, in an oration, that a thousand gave him his due deservng commendations." Great magnificence, too, was displayed when Charles II. passed through the City to be crowned. Evelyn, we know, was among the crowd near Temple Bar, on the Strand side, and "blessed God;" and in a balcony erected over the gateway stood the Duchess of York; while close by were drawn up the benches and others belonging to the Luns of Court. At the bar "was a delightful boogey full of several beasts, both tame and savage," and eight wails ever and anon filled the street with music. The houses flattered with tapestry, and the roadway was strewn with flowers on this occasion.

But there were other nights the old gate saw before it was demolished and the present structure erected on its site. Here is an unhappy knight, Thomas de Turberville by name, on his road to the gallows. He had been taken prisoner by the French at Rheims; had returned to England as a spy; and, having been tried and convicted, is now being drawn on a fresh ox-hide from Westminster to Chesham previously to his execution. Few of the citizens that saw this ghastly sight lived to see the commotion caused by Wat Tyler's mob, as the great unwieldy mass marched to the Savoy Palace to destroy it; for this last terror was felt eighty-six years subsequently to the horror expressed at the knight's ill-fate; but many who made way for Wat Tyler saw a smaller concourse in 1392, when there was "a grote debate in Flete-strete" between the servants of the Bishop of Salisbury and the citizens, which led the king to take a large fine of London, "or he wold he played." And now it is night, and a dead goldsmith, slain outside "Temple Barre," is dragged by the merciless guilty slayer down to the water's edge and thrown under the "Temple bregge." Here is a sad scene, too, in broad golden daylight. Eleanor Cobham, Duchess of Gloucester, is doing penance, walking bareheaded, with a large wax taper in her hand, to St. Paul's, to make an offering at the high altar. Her enemies declare she has a wax image of the king upon which she has wrought the ill that has resulted in his sickness; and, although they are going to let her off with penance and a life-long imprisonment, they have hanged one of those they call her confederates and burned another. Who is this broad-shouldered, thick-set personage, dressed in one of the coats of the guard of bluff King Hal, passing through the bar? It is no other than the king himself coming into the City *incognito* to see a periodical spectacle in which royalty took no part. As he strides along the footway, carrying a halbert over his shoulder, 2,000 horsemen are mustering round a galaxy of burning

* Memorials of Temple Bar, with some Account of Fleet-street, and the Parishes of St. Dunstan, and St. Bride, London, by T. C. Noble, London: Dwyer & Bateman.

crossed, for the purpose of marching through the wards to see that they are properly watched and lighted.

The life and gaiety are the unusual character of the scene here so many charms for him that he resolves to bring his queen for the time being to see it. And on St. Peter's Eve they both arrive in state to be spectators of the citizens' magnificence. The old game saw, too, more riots than we care to count. Now they were the citizens who were "out;" now it was a Lord of Mierle; and then the Earl of Essex; and now, again, it was but a scuffle to obtain possession of a sword, that converted his Majesty's highway into a sea of heads, and filled the air with the roar of many voices. But now and then looked up upon sights that we must not pass by. On the 19th October, 1637, for instance, an ambassador from the Emperor of Morocco arrived in London, and on Sunday, attended by a goodly company, proceeded to Westminster, taking with him four Barbary horses, resplendent with embroidered saddles and golden trappings, sent by his Emperor as a present to the King. Two Moors were among the throng, the one carrying the ambassador's scimitar, and the other his slippers and trappings; and behind marched eighteen captives whom Master Robert Blake had redeemed from slavery. Let us stand aside again whilst a procession of another kind passes. It is the funeral of a murdered man, Sir Edmundbury Godfrey, and as it stretches through and finally clears the bar, we may count seventy-two London clergymen walking two abreast before the body, and a thousand others following. A great concourse looks on silently.

Hackney coaches, about this time, began to rumble through the bar, and stand in the Strand, much to the chagrin of the watermen, who opposed them right and left, and petitioned the king to prohibit them from riding and carrying people east and west, and to and fro; and the many populace often failed to get out of the way of the unskilled drivers, and lives were lost.

Here is a group of excited citizens round the bar now, while the Lord Mayor is presenting the City sword to a grave-looking gentleman in an olive-coloured coat with gold buttons and loops, and a gold band round his hat, who is on his road to dine with the chief citizens. The grave stranger thus honored is Oliver Cromwell. Thirty years later, 200,000 people are abroad enjoying a fantastical procession, formed of mock cardinals and bishops, which precedes a mock Pope, who, at Temple Bar, is jerked out of his chair of state into a bonfire. But between these two events there occurred the Great Fire, which burned Fleet-street as far as the third house from St. Dunstan's Church on the north side, and exactly opposite the coach stand on the south side. The bar was one of the streets of guards placed to prevent the spread of the flames; and the officers in command of it were Lord Bellagars, Mr. Chicheley, and Mr. Hugh May, who were empowered to appoint sub-commissioners to distribute the biscuit and cheese allowed by the king to those that assisted in this duty. On the night of September 6, when Lord Oxford made his rounds, he found Lord Bellagars, Mr. May, and the constables had all quitted their posts, leaving Mr. Chicheley in sole charge. But the fire did not attack the old gabled barrier.

We first hear of the intention to build a new gate upon its site in the following entry in the City archives, authorizing a consultation with Inigo Jones:—

"12th Charles, May 5, 1658. Item according to an order of the Lords of the Mint made holding Privy Council of the 24th April last, it is ordered that Mr. Recorder, Mr. Alderman Fife, Mr. Morris Abbott, and Mr. Alderman Gresham, shall and lawfully before the Board touching the repairs of a house at Temple Bar, shall meet and confer with Inigo Jones, esq., Surveyor General of his Majesty's Works, touching a convenient gate to be built in that place."

Kent published an engraving of the design that was furnished by Jones in compliance with the instructions he received at this conference, and a MS. in the Harleian Collection gives us every particular of it. The design was not, however, carried out; and it was not until after the coronation of Charles II. that the subject was again discussed. About three years after that event the Council of the West, Mr. Noble finds, intimated to the Council of the East that it was very desirable to rebuild the gate; and in an Act for repairing the highways, in the fourteenth year of the same reign, there is a proposal to widen, among others, "the passage at Temple Bar." But still nothing was done, for the

widening of Temple Bar was argued as in a paper upon City nuisances, particularly irregular timber buildings, read to the Privy Council by Sir John Pepham in 1664. Further on we find Charles writing to his trusty and well-beloved Mayor, Recorder, and Aldermen, desiring them at once to proceed to widen the bar in conformity with the recommendation in the Act, and promising them he would aid and encourage them. Among the architects who took an interest in this question was Sir Balthazar Gerbier, knight, whose academy for teaching arts and sciences was the predecessor of the Royal Academy, and who, it will be remembered, wrote "A Brief Discourse concerning the Three Chief Principles of Magnificence, Building, viz. Solidity, Convenience, and Ornament," in which he addressed Parliament, in the preface, as follows:—

"To the Lords and Commons assembled in Parliament.—May it please your honours! It being lately reported that your honours have deliberated to have the streets made close, to enlarge some of them, and to build a sumptuous gate at Temple Bar, I thought it my duty to present this small discourse of the three principles of good building, and with a printed paper concerning the clearing of the streets, the levelling the valley at Fleet, the widening of the river, and the building of a sumptuous gate at Temple Bar, whereof a draught hath been presented to his Sacred Majesty, and is ready to be presented to your honours upon command with all the devotion of Your honours' most humble and most obedient servant, B. GERBIER DOCTOR, Knight."

Their honours never demanded the production of this design, and the Great Plague and the Great Fire postponed the consideration of the question till 1668, when a meeting was arranged between the City Officers and the king's commissioners to confer about the business of the improvement of the bar. A year later, and we find the City council in communication with Sir Christopher Wren, and by-and-by, the lord mayor relating to his fellow officers how he was sent for by the king, and pressed to accept the charge of carrying out of the bar, and of the hackney coaches, to which they had hitherto demurred, as a fitting assistance from his Majesty towards the rebuilding of the gate and widening of the way through it. It is added, that he accounted for the delay by urging the great expense incurred by the fire, and the consequent rebuilding of public works, and the large outlays required; but that the king insisted they should take down the said bar and buildings, and accept the said 1,005*l.*, and made his royal pleasure less exacting, by promising that when that sum was expended he would take care they should have another sum out of the tax upon hackney coaches or from some other source. This royal interview sealed the fate of the bar; and within two years from that date, in the twenty-fourth year of the king's reign, Sir Christopher Wren erected the present structure.

Noble has looked through the Guildhall books, and found several entries relating to the new building. Those of the most interest prove that Joshua Marshall and Thomas Knight were the masons employed, and John Bushnell was the sculptor of the four figures in the niches. Joshua Marshall was the son of Edward Marshall, master mason to Charles I.; he carved the fine pedestal of King Charles's statue at Charing-cross, usually attributed to Grinling Gibbons, and erected the Monument. Walpole gives an interesting account of Bushnell, the sculptor. He proposed to build himself a large house fronting Hyde Park, in the lane leading from Piccadilly to Tyburn; and dying, of a disordered brain, his sons lived in the shell of this house, with neither floors nor staircase, in an architectural kind of way. For the four statues upon the bar, Mr. Noble finds Bushnell received 480*l.*, which sum was paid in instalments spread over ten years. Counting 700*l.* paid to Marshall and Knight, 12*l.* to Anthony Tanner, bricklayer, and other sums in fees and compensation, the total of all payments is 1,397*l.* 10*s.* Scarcely had the newness of the fabric begun to lose its novelty, when a proposal was set on foot to remove it altogether. The extra traffic caused by the hackney coaches evidently led to its enlargement, and now the enlargement of the accommodation upon the road called for its removal. John Gwyn, in 1766, seems to have been the first to print a proposal to do away with the time-honoured barrier, and he thought it appears the corporation went so far as to make provision for the lessees to quit possession at six months' notice, in 1759. Thirty years after this last date, Alderman Pickett, exasperated at the constant block of vehicles at the bar, doubtless, presented a petition, signed by the most respectable inhabitants of the district, praying the

Court of Common Council to remove this and other impediments to their progress. There was great excitement with much talk and writing over the matter, as one selected "prophecy," by John Williams, will indicate:—

"If that gate is pulled down 'twixt the Court and the City, You'll find in one mass prudent, worthless, and witty. If you league it and lordling, as brother and brother, You'll find order's chain, and they'll war with each other. Like the great walls of China, it keeps out the Tartars From making irruptions where industry barters."

But the bar had too many friends in the City. It was not at court, to be rooted up in any such unceremonious manner; though Alderman Pickett's indefatigable action against the removal of impediments was argued upon ultimately, as far as the demolition of Butcher-row was concerned.

We have said few are aware of the use now made of the chamber over the central gateway. In old times, as our readers will have guessed in the course of our remarks, it was let as a residence, just as Aldgate-gate was let to Geoffrey Chaucer. But at the present day and for many years past, it has been in the occupation of Messrs. Child & Co. bankers, and is fitted up with shelves, on which are ranged their army of ledger-books, and gives a very interesting chapter on the banking-house of Fleet-street, and in course of his acquisition of information for it, was allowed to inspect this chamber over the central traffic of the great highway. It is entered from the first floor of their banking-house "by a series of steps, iron doors, and a passage [which] gives a very interesting in one's mind the idea of it being the entrance to a prison cell," he relates; or, as the ledgers would suggest to many, to a bridge of sighs. Charles II., Nell Gwynne, Samuel Pepys, and Prince Rupert had accounts with the great firm. In the first-floor room of the banking-house, over the chimney-piece, he noted a painting, by Michielangelo Bookor, of the City side of the bar, with, as he puts it forcibly, "the luckless skulls of luckless traitors spiked upon the summit of the gate;" and in the same apartment hangs a portrait, by Sir Thomas Lawrence, of the recent head of the firm, Lady Sarah Sophie Child, Countess of Jersey, arrayed as for the coronation of George IV. The member of the firm who permitted him to tell us these and other facts, he adds, is a descendant of the great "Spectator," whose writings have helped, as much as Dr. Johnson's association with the locality, to cast that halo round the bar that has hitherto prevented its destruction.

Like the Memorials of London Life compiled from the City archives by Mr. Riley, and noticed in these pages, Mr. Noble's Memorials of Temple Bar present a picture of middle class life in the great crowds, the lower classes, rather than, as a rule, the upper ten thousand, and special favorites of fortune. Prince Rupert's glittering plume and sparkling jewels, or Mistress Gwynne's gay coach, may occasionally have brightened the surroundings of the bar and the routine of everyday business; but the great stream of passengers on foot, in coaches, and on horseback, that constantly flowed through the gateway, was composed in the main of the industrial classes. When he has daily chronicled the pageants and processions that have been down to the arrival of the Emperor, Mr. Noble, Mr. Nodding, Mr. Nodding, to the worthies that have lived in Fleet-street, the great goldsmiths, as we have seen, the famous taverne, the clergy and benefactors of St. Dunstan's Church, extracts from the register, with insight into sorrows and joys of the Marshall, Masons, Isaac Walton, the families of Cavendish, Somerset, Westworth and Talbot, and others; and thence to the Temple and Inns of Court, Whitefriars, the three old theatres, the Fleet River and Prison, and Bridewell. One sensational aspect of Fleet marriages, however, he has missed. In Burn's History of Fleet Market it is recorded that a certain woman "ran across Ludgate-hill in her shift," under the impression, it is supposed, that in going to her husband without any property he would not be responsible for her debts.

Among the curiosities which the author has so industriously and appreciatively grouped together, is an account of the various Fleet-street exhibitions, from the mandrakes, in 1611, to the fire-entrance in 1718, who sucked a red-hot poker five times a day; and including Mrs. Salmon's warlock, at the sign of the Golden Salmon, Temple Bar, removed from the Golden Salmon in St. Martin's, near Aldersgate, because of the

greater sentences "for the qualities" coaches to stand unmolested." Like Miss Linwood's needlework in our own time, Mrs. Salmon's figures cultivated their popularity, and were, ultimately, sold for \$60., in 1812. The signboards, tokens, coats, are next treated, and even the occupants of some of the shops at the present day are mentioned, and the names of the celebrities related. Thus it will be seen that incompleteness is not a fault that can be found with the memorial before us. On the principle that least need not be least, Mr. Noble devotes his concluding chapter to a history of the Fleet-street printing-press. Wykln de Worde, "in the reign of Henry the Fifth," is the originator of the trade, and the long line of illustrious publishers who have helped to make the locality the very cradle of letters. Pynson, who printed the Chronicle of Fabyan, the alderman whose name occurs in the first entry on the City books relating to Temple Bar as a structure, and Froisart's Chronicle, worked at his press at the "Temple-barne," and the last entry calls him "the first we look further down the list printed, than some of Shakespeare's works, and those of Milton, Quarle, Walton, Butler, Dryden, Cibber, Pope, Gay, Rowe, Swift, Dimsell, Sir Walter Scott, and Byron, have been published within a small radius of this gateway into the City, we must allow Mr. Noble would have passed over as uncharacteristic, had he not been the subject if he had not noticed the many eminent booksellers whose houses have been founded in the locality; though, on the other hand, this comprehensiveness crowds his canvas as much as the precincts of the bar have been crowded on State occasions and in troubled times. Just, however, as the looker-on can always find entertainment in a good dinner, so the reader will find something to his taste in the thronged little volumes we now close with compliments.

PROFESSOR SCOTT ON ARCHITECTURE,
AT THE ROYAL ACADEMY.

LECTURE II.

IN my last lecture* I explained the general principles of groined or intersecting vaulting, and just carried on the subject through its simplest case,—the covering of a square space, or any repetition of square spaces, by the intersection of semi-cylindrical vaults; and I just showed how, by emphasising the outlines of the squares so covered by means of transverse ribs or angles, and by placing impost mouldings, pilasters, columns, or colonnettes in the sustaining piers, such a mode of covering a space might be readily made at once susceptible and suggestive of architectural treatment.

Let us now proceed to consider the application of the same principles to the vaulting of spaces of other forms than the mere square.

The next error, perhaps, in point of simplicity is an equal-sided polygon,—say, for example, an octagon. We must here suppose eight cylindrical vaults crossing one another from their opposite sides of the octagon; and it is clear that their intersecting lines will be the diagonals of the octagon. The opposite angles of the octagon, which will coincide, of course, with the opposite vertices. The only objection to this form of vaulting is the low proportion of the arches produced by these intersections, which, though more than twice and a half the width of the sides of the octagon, only rise to the same height, or about one-fifth of their span,—a defect which will be more fully explained in the next chapter. I have to describe. Just as the half-dome (as seen in the chapel of the Tower of London) forms a natural covering for an apsidal termination of a barrel vault, as a portion of a polygon, thus vaulted, would appear to be the co-terminal apsidal termination of a groined vault. A difficulty, namely, arises, in this case, of finding a suitable height of the vault: last described, which is not one-half of the height of the semicircular vault which it would have to meet. How, then, is this to be got over? How are the vaults proceeding from the narrow arches of the sides of the octagon to be brought to range in height with the wide vault which spans the whole width?

The solution of this difficulty will be better considered by means of a simple and more familiar case. The intersecting vault in its most normal form is plain enough in its application to a square compartment, but becomes difficult when applied to a space longer one way

than the other; yet oblong spaces continually present themselves as requiring to be vaulted.

Mathematically this is readily met, and that with perfect accuracy, by making one or the other of the intersecting vanitas *elliptical* instead of *circular* in its curvature; making, for instance, the narrower arch a semi-ellipse with its longer semi-diameter vertical. This, however, is an unsightly form, and was always rejected, though the natural mode of effecting the object, and though it would give intersecting curves which would be complete and in vertical planes.

The Roman builders solved the problem, at the sacrifice of mathematical accuracy, by what is called *stiffing* the narrower arch; that is, raising its springing till its crown becomes level with that of the wider arch. This is a practical solution of the difficulty, but is not a very pleasing one, inasmuch as the line of intersection is most unethically twisted, and, in point of fact, begins at considerable height above the springing of the vault.

To go but, however, to our previous case of the apical termination of a vaulted space, it affords a very fair solution of the difficulty by which we were before encountered; for it is evident that the ribs of a vaulted space may be lifted up till their crowns become level with that of the main vault; and, as the intersecting angles of a polygonal groined vault coincide with its transverse ribs, we have nothing to do but to raise from every angle transverse ribs similar to those of the three of the main vault, and to make the smaller vaults of the octagon to intersect upon them. There will be a little geometrical inaccuracy in the forms of these coils of vaulting; but, as the angle ribs are not to be raised, the inaccuracy will not be noticed, and would not seriously offend the eye.

There is, however, another method of meeting the difficulty; but before describing it, I will say a few words on the treatment of other difficulties resulting from the irregularities in form of spaces which have to be vanquished.

Let us, as an example, suppose an aisle or corridor passing round such a polygonal figure as we have been considering. It is manifest that its compartments will have a form enclosed by unequal sides, or, to say the least, one side will differ greatly in width from that opposite to it.

The stilted system before mentioned is the most obvious method of getting over the difficulty. It may be, that three of the arches surrounding such a compartment may be about equal, and no great difficulty would occur as to their intersection; but the fourth, being far narrower, would have to be stilted to raise its crown to the level of the others, and its lines of intersection will consequently be more or less disturbed.

The difficulty is, in early specimens, increased through the apex being usually round instead of polygonal; though this does not vary materially to alter the case. We have in London two excellent examples of this apical aisle: that in the chapel of the Tower of London and that in St. Bartholomew's Church in Smithfield. The former of an early and the latter of a later type.

In both, the narrow arches are greatly stilted; and at first sight the two may appear to be similarly treated; but on closer examination there will be found to be much difference between them. In the Tower Chapel the transverse ribs are of the same proportions as the longitudinal ones towards the outer walls, and as to reduce the waste of parallelism of the groined compartments, a very unsightly expedient; and the capitals of the columns are square, which makes the backs of the arches they support nearly double the width they present in front: while at St. Barthelemy the transverse ribs are of inferior size to the capitals, instead of being square, have their sides radiating from the centre of the apse, so as to share with their arches the spreading of their outer sides. The difficulty is really increased in the later work, but is met by more skillful workmanship somewhat similar to that used in the choir of the choir of the choir, in the construction of a circular building with a central pillar vaulting a circular building with a central pillar. In each, the main surrounding vault, if not supported by others, would assume the form of a portion of an annulus or ring. In the aisle such a ring would be wide in the opening it surrounds, but in the circular building its opening would be of the same diameter as the central column or its capital.

This annulus, or curved vault, would become divided in plan into triangular portions by the transverse ribs which would meet on the central pillar and the cross vaults, proceeding from the surrounding arches, would intersect with only

the outer portion of the vault, the inner portion which rests on the pillars being uncut by them, and assuming the form of a concave conoid, something like the flower of the convolvulus.

This form of vault is well seen in two instances in the cathedral at Worcester. The best known of these is the chapter-house, a circular building, between 50 ft. and 60 ft. in diameter, whose circumference is divided into twelve equal bays by a series of piers radiating from the central pillar. The interesting coils of the groining are at present pointed, possibly the result of a subsequent alteration, and simply intersect with the surrounding vault. In this instance the spiral mould is broken into a polygonal form to give a more finished and unbroken surface. This may be considered the father of our beautiful polygonal chapter-houses, of which I shall have more to say as I proceed.

The other instance I have alluded to at Worcester is the spiral crypt. In this case the intersection occurs not in a distinct form, but in combination with an apical aisle on the one side, and a vaulted span, with a central range of pillars, on the other; the last pillar, forming the central point of the semicircular apse, is exactly in line with the spiral, and gives rise to a similar groining to that of the chapter-house.

The same problem, when applied to a polygon instead of a circle, is open to two different modes of solution. In the one, the main vault is always supposed to run from each *side* towards the central pillar; in the other, from each *angle* towards the pillar. I shall, however, have to go more minutely into this when I come to pointed-arch vaulting, to which the last-named system more especially applies.

Having now briefly touched upon the most prominent forms of round-arched vaulting in its more normal form, as resulting from the barrel vault and its intersections, I will digress for a short time to consider some of the conditions which relate to what I in my last lecture stated to be the other most simple kind of vault,—the dome. I do so, however, not with any idea of treating at large on a form which should be made the subject of a separate lecture, but merely to facilitate the explanation of certain historical influences which it exercised upon ordinary vaulting.

A dome is the most typical form stands upon a circular wall; this, however, is by no means a necessary condition. It may in reality cover a square or polygonal space just as well; for, suppose a dome is a polyhedron, the base of which is a homophedron, it is clear, from the properties of a sphere, that vertical planes erected on the sides of such square or polygon will cut the hemisphere in semicircles of the diameter of the base. It follows, therefore, that the dome of a square or polygon will be composed of a series of arches, each of which will intersect with a dome in the form of semicircular arches standing on each of its sides; and, consequently, that such a square or polygon will carry a hemispherical dome, or rather the remainder of the dome after cutting the base into a square or polygon.

For our immediate purpose we will limit the case to that in which the inscribed figure is a square.

Now, as a rule cut in this manner by four planes is not a very strictly form, and needs some embellishment; but if a horizontal circle be drawn within it by means of a cornice resting on the crowns of the supporting columns, it is at once improved. This form, and on which has been largely used both in Byzantine and in modern architecture. My present purpose, however, suggests another mode of giving lightness to the squared dome. The lines drawn on its surface may lie in vertical planes, as usually in the dome of St. Peter's, or in horizontal planes passing through the angles of the square, touching the dome throughout their length, and intersecting one another at its apex, we obtain a form not wholly unlike a square groined vault; the great difference being that the intersecting diagonals of a squared vault are semicircles, while in the other they are semicircles; that in the one they represent an actual angle, while in the other they are arbitrarily drawn on an unbroken surface; and that the ridges or crowns of the vault in one case are horizontal, while in the other they are raised and curved circles. These forms have been found in some parts of Persia, and are now found in this country.

There is, however, an instance of it in the vaulting beneath the tower of Goring Church, Oxfordshire.

Though this is not really groining, but a disguised dome, there is a ready process by which

* See pp. 100, 104, *ante*.

that now suffices all Mr. Poole's productions, leaves the exquisite colour and power of imitating daylight, or any light and shadow effect, only a recollection. Messrs. Linnell, father and sons, are able, and therefore very conspicuously, represented. "A Study in the Fields," a pathway skirting rows of ripening corn (46), by Mr. W. Linnell, is especially brilliant and forcible; near the top of the page, a "Study in the Fields," trees to give cause for the effect, by Mr. W. Holyoake (50); and more depth and darkness, with some grander touch, in Mr. A. MacCallum's view of "The Cedar Grove, Chiswick" (128). One of the best landscapes here, emanates from Mr. Alfred W. Williams (138), "Through the Woods and over the Mountain." With some analogy to the "Study in the Fields," of the same strength of apprehensiveness as well as of power of hand to realise it, that excellence becomes almost individuality in this capital performance.

To return to the figure subjects for a change, Mr. W. Gale has nicely contrasted hale old age with happy unconscious childhood. "The Bee-Master" is manufacturing a hive; and the little child who amuses him during his task by merrily prattling, will grow up into a hive-making president, no doubt. (35) "Paradise Lost" presents the *ultimatum*, as well as the first intention of this simple composition,—a very agreeable and satisfactory one. In sympathizing with the parting of lovers, Mr. Gale is far less successful, unless he meant to make a joke of it (205). Anne Page and Master Blunder will ever remain the world's story of the characters, and it is as difficult now to make a new reading of *As You Like It* as of *Shakespeare* (notwithstanding Mr. Bolleau); so Mr. R. Farren (37) has gone ahead with his costume for the sake of variety. It is nicely and prettily done; or it would not be worth mentioning. Mr. Weekes is still a staunch admirer of "Border-riders." And why should he not? These riders are the heroes who have the time it takes to lie, dropped in from the floor, and to the tune of thousands—*not Scotch*,—are worthy of renown. No; the glory of robbers died with the dye of their clothes, though they of the past were easily satisfied fools, indeed, compared with the worse—and their betters—of the present. "Hiding from Parauit" (53) shows us one of Mr. Weekes' best heroes; and Mr. J. R. Dicksee (54) has done as well. It was "Irreversible" (54), which she is not. Indeed she is not half so handsome as "Ophelia," by Mr. T. F. Dicksee (200), who,—we mean Ophelia, not Dicksee,—is not half mad enough to satisfy any jury that she did mischief without knowing what she did or did not—such mischief as those of her sex who do it, they say, "in the twilight" of a conscientious reform, by Mr. W. Maw Egley (61), will guess at and of the intensity of its cruel wrong. There was little hope left for Mr. C. Lucy to throw a fresh light on any incident of Mary Queen of Scots' history after the exhaustive analysis of Mr. Froide. Her forced abdication at Lochleven Castle, 1567, 1567 (57), has so often been pointed before that it is doubtful whether its necessity be the hindmost; and yet there is much executive skill here brought to bear on this tattered and threadbare subject. Natural fact, as opposed to theory and belief, is worthier consideration if the wish is to reach general conviction. So thinks Mr. J. Archer, E.S.A. Truth, as it stands, is better worth the pains that are taken to depict it than to revive dead dates. Sunburnt, active children give more promise to him for typifying life than any reading of one man's opinions, or any cognition of his own imagining could help in its real presentation. Such sturdy facts of folk as he portrays owe all the interest they excite to a ready identification. Admirable naturalness in the last two tales, the *Irreversible* and *My young labourers* who are "Bringing Home the Heather," or meaning to take it home presently,—for they are resting quiescently to be "took off,"—wider sympathy than any stretched subject from the tomb of history. Mr. J. C. Thom's "French Shepherd going to Midnight Christmas Mass" (113) ask for a cognate acknowledgment, for one, indeed, more representative in fact, as they plod on their way in the cold winter's moon-

"Yenus's Looking-glass" (116) is somewhat like a fantastic creation of Mr. Woolmer's and is all the better on that account, though painted by Mr. H. Tidey. "Rosy Slumber" (124) might be taken for the first chapter of obligation entailed by the "Heirloom" (123), though this is painted by Mr. P. R. Morris, and the sleeping, still more embryo hero is one of Mr. Bavlars's

pretty creations, who may wake, perhaps to the contemplation of a notched sword presently—the tale of what he owes to primogeniture.

"Haddon Hall in the Olden Times" (127), by Mr. T. J. Barker, introduces more such promising young sprigs from a time-honoured stem, gaily unparsoned with their pretty white ponies, groomed to a polish that befits them to their riders.

Mr. W. de la Torre Thomas shows his proficiency as a master in the good drawing of his figures in the allegory of "Angels contemplating Men" (134), achieving thoughtful expression which produces thought, and demands recognition. The artist's sense of the human cannot, in our case, accord with any great admiration for Professor C. Veriat's "Virgin, Child, and St. John" (31), with those who identify the difficulty of satisfying abstract concepts with the impossibility of doing so. Many would be impossible to be realised by one,—this is entitled to great respect. Mr. A. Legros sends a steady, broadly and simply treated, of "Le Jeuneur du Violoncelle" (30), which is a study of the ancient art than the epoch of present day.

Amongst other works we noted in the catalogue are "The Wayfarers" (17), by Mr. Haynes King; "The Black Mount" (44), by Mr. J. A. Houston, R.S.A.; two moonlight effects, by Mr. A. Gilbert; "The Mermaid's Cove" (58), and "On the Coast" (60), by Conely Shillington; "Cloudy Location" (61), a little sketch, very admirable, by Mr. G. F. Teniswood; "Craven Point—a Grey Day" (65), by Mr. J. W. Oakes; "Not Enough" (74), by Mr. A. T. Verhoeven; Ball; "Longhridge Fell, Westmoreland" (90), by Mr. Sidney R. Percy; "Noreham Castle" (91), by Mr. J. W. Oakes; "Noreham Castle" (96), by Mr. G. Sant; "Cornfield" (103), by Mr. N. O. Lepton; "Cast Away" (125), by Mr. J. Danby; Mr. C. J. Lewis's large landscape (135); "Il Rio Travoso, Venice" (145), by Mr. G. C. Stanfield; "Watching an Unexpected Arrival" (177), by Mr. C. Castiglioni; "South Sea Storm" (188), by Mr. C. Castiglioni; "South Sea Storm" (193), by Mr. R. Beavis.

Mr. H. Foley, R.A., is the only sculptor who exhibits on this occasion; his well-known statuettes of "Edmund Burke" and "Oliver Goldsmith" (212-213) are very excellent as likenesses so far as paintings and prints can lead to a judgment.

Again, we wish the "New British Institution" all success.

THE RIVERS COLLECTION COMMISSION
AND IRRIGATION.

The first report of the existing Commission has been issued in a printed form.

It gives a detailed description of the rivers and running waters in the Mersey and Ribblesdale basins; considers the various influences to which river water is subjected; and investigates the pollutions by town sewage and by manufacturing refuse which it has suffered in these districts, and the various remedies within reach. The supply of water and its purification have also been considered.

The Commission propose the establishment of a River Conservancy Board, but they differ individually in detail on this subject, and two reports by the three Commissioners are appended; one signed F. Frankland and John Chalmers Morton, and the other W. Denison, Major-General.

The Commissioners, in course of their report, review what has been done towards the establishment of sewage irrigation. Of most of the examples, as at Croydon, Rugby, Edinburgh, &c., we have already repeatedly given details; but we may run over some of those instanced by the Commission, and indicate their opinions on the subject. The experiments, as our readers know, are mostly partial, or do not deal with the whole sewage of a town. On the whole the evidence of the Commissioners is very favourable to the irrigation principle.

The often-quoted Edinburgh meadows, which they begin to use, are not regarded as a good example of the agricultural remedy for the pollution created by town sewage, which is poured over the limited area in such an enormous quantity that the soil has not fair play given to it as a cleanser, and the water therefore leaves the grass land still filthy and offensive. Even here, however, they observe, we have a remarkable illustration of the purifying power of soil and plant; but the Edinburgh experience is rather one of agricultural profit from the use of

sewage than of that perfect abatement of its waste and nuisance which, in the interest of rivers, we desire to see. Altogether there are only 400 acres to a population which must largely exceed 100,000.

Lodge Farm, Barking, is an example of another kind, where the supply of sewage is limited, and where the object has been, from this limited supply, by means of an ample extent of land, to obtain the largest annual produce. But neither of these is a desirable plan, although the latter, or the purity of the water, been the object aimed at, although in the Barking case that object has been incidentally secured. The soil of the farm is considered to be too hollow and porous to allow the most to be made of the manure. Sink- ing away even in the channels which carry it to the cesspits, and reaching the surface again before it reaches the plant, and the remainder which trickles over the surface of the cesspits, remain there too short a time for the entire extraction of the fertilizing matter which it con- vey. The effluent waters, however, are of a great extent purified. It appears, upon the whole, that a moderate supply of sewage, if judiciously applied, one ton of gas per acre is obtained, over and above the natural produce of the soil and climate; the other results were also considered to be good. The Lodge Farm experi- ence, as regards grass, is said by the Commis- sioners to represent a return of 5s. annually from every individual contributing to the sewage disposal.

The report then turns to a large number of instances of irrigation where the object has been, not only to make a profit, but to abate a nuisance. Such are the cases of Aldershot, Banbury, Bedford, Croydon, Norwood, Rotherham, Warwick, and Worthing.

At Aldershot, the reporters remark, the extreme natural poverty of the soil does not seem to have been a hindrance to the efficiency of the process of cleansing by irrigation, and the farm produce was of vigorous and abundant growth. We have here a return of 1,200*lb.* from the waste of 7,000 adults or 3*s.* 4*d.* per head per annum.

In the Carlisle experiment about 100 acres are employed, and the sewage is lifted and deodorized by carbolic acid before it is distributed on the land. There is, properly speaking, no effluent water from the meadow, the whole of the sewage being absorbed by the sandy soil; and there being no drain outlet, the result is not quite so trustworthy as in the other cases; nevertheless, it is concluded from it that the soakage from the irrigated land into the neighbouring river is effectually purified.

At Penrith the drainage of a town of 8,000 people, only partly provided with water-closets, is received on 80 acres of good meadow land, near the Esmont. A little more has been done here than at Carlisle, to distribute the water by means of permanent carriers, but the treatment is otherwise the same, and the result is very similar. A very large stock of cattle and sheep is supported on the land.

At Kingby the nuisance of the sewage is entirely abated, and so much produce realised as to make it probable that the remedy, which has been an expensive one, will yet prove very profitable.

At Banbury a population of about 11,000 people drain into tanks, from which, through a 12-in. pipe, the sewage is driven by steam-power, a mile or more, to the upper end of a farm of 136 acres. By this means the extreme filthiness of the river is now satisfactorily abated. The produce is satisfactory; and it is believed the farm will soon repay rent, costs, and loan.

At Warwick the sewage of 11,000 inhabitants is poured over 100 acres about a mile from the town. The nuisance of the sewage is sufficiently abated, and large crops of Italian rye grass have been obtained, for which there is a ready sale.

The Bedford undertaking is shown to suffice as a sanitary agency, and its ultimate profitability is said to appear probable. The land at present rented is only about fifty acres, but 500 will ultimately be put to use.

At Croydon the success of sewage irrigation, remark the Commissioners, as a deodorising and cleansing process, is complete. The sewage is much more efficiently purified than that of Norwood.

The Working results are still incomplete, and are reserved till the issue of a later report: they are, however, sufficiently encouraging to justify the prosecution of the experiment on a larger scale.

The Commissioners recommend that additional powers be given, under proper regu-

lations, to corporations, local boards, manufacturers, and others to take land compulsorily for cleansing sewage or other foul liquids, either by irrigation, filtration, or otherwise; to obtain easements for culverts and cuttings for drainage through private property, compensation being given for damage actually done.

ARABIAN DESIGN AND ART.

IN the course of the discussion on Mr. J. D. Crace's paper, part of which we printed, Sir M. D. Wyatt, after strongly complimenting the author on the mass of information he had brought together for culverts and cuttings for drainage through private property, compensation being given for damage actually done.

I need scarcely remind you that the germs of the Arabian technical and ornamental arts are to be found in those of the Byzantine empire, to which they had for the most part descended from the decaying Roman empire. If there is anything in Mr. Crace's admirable paper to which any one could take exception—a cavilling in which, indeed, it would be almost wrong to indulge,—it might possibly be that the speaker's notice of the history of Arabian art scarcely sufficiently carried us back to the stock upon which it was wrought. The victorious armies of the Prophet and his immediate followers speedily carried Islamism over vast tracts of country, upon many of which technical and decorative arts had long been cultivated with signal success. Hence the peculiar conventional character with which the Arabians so early stamped the ecclesiastical and domestic architecture effected at Byzantium, in Asia Minor, Africa, and Spain, between the Orientalism of Persian and Indian arts (as they existed before the Hegira) and the classical type traditional amongst artists and workmen trained on the system of Imperial Rome. I have myself had occasion to point out in this room that intimate connexion which existed between the Persians and Justinian, and its influence on Byzantine art. The peace which was concluded between Justinian and Chosroes Nushirvan was one that was "to last for ever," according to the terms of the treaty; and Persian architects were largely employed by Justinian. Thus we see in the details of St. Sophia an evident departure from both the technicalities and the principles which characterised the old Roman works, and a certain marked anticipation of some of those changes of form and predilection for inlay and surface decoration in structure which were afterwards manifested to a great extent in the works of the Arabs. The second aspect under which this subject is interesting to us as a practical professional man,—students, at least, if not masters, of the handicrafts we control—is the technical basis of this style. This it was which made it vigorous from its earliest date, and has imparted to it the perfection of execution which always characterised it. From first to last it has exhibited the skilful workman compelled to do his best unflinchingly, and obediently to please, the artist, the good workman, who would put up with no half-hearted service. Every artisan, whatever may have been his speciality, engaged on the great works described by Mr. Crace, was a master of his craft, who carried out his labour in subservience to the artistic and best traditions of his trade, keeping closely to every characteristic of design and workmanship which the materials he used demanded, and which the tools and processes at his command best enabled him to execute. From his intelligence as an operative, his enlightened ideas as a designer, and the perfection which he attained by the Arabian system of apprenticeship effected of the study of geometrical form (which had been carried so far by the ancient Greeks), enabled him to bring to bear upon his special branch of industry, he was speedily in a situation to originate new features in his business, and to make the old ones ever more beautiful than they had previously been. This in carpentry and joinery, from the very dawn of technical Arabian art, we may observe a clear recognition of the best mode of combining and contrasting both in form and colour, all the various works which appeared to be at command. Not only was this the case with the woods, but we find the same intelligent use of other materials in all the

architectural works of the Mohammedans. I differ a little from my friend, Mr. Owen Jones, in what he has remarked with regard to the place and period in which Arabian architecture was most highly perfected. No doubt, it is to be recognised in the earlier portions of the Alhambra, as having attained a thoroughly concerted system, in which, as in perfect Grecian architecture, every part had its definite form and dimension allotted to it, without confusion, and with such true and absolutely mathematical design and setting out as to preclude the possibility of the occurrence of a pattern geometrically inaccurate, or one which does not complete itself in all its parts and repetitions. We find this development of completeness in the Alhambra in the clear expression of function in every architectural member. Certainly in the Alhambra, with which I am myself better acquainted than with the monuments of the Khalifate, we find the overlaying of the stucco and coloured decoration has to a certain extent hidden the structural details, and as this overlaying certainly is, and perfectly as it has been made to harmonise with all of structure which is allowed to remain visible, it generally, to my eye at least, obscures too much. In earlier works, both of the Arabs and Moors, a principle of simple masonic construction is largely isolated, and the stucco is never overlaid by the plaster, nor is the eye misled by the rays into confusion as to the system of jointing. In thus dwelling upon the beauty of Arabian masonry, I would not be understood for a moment as depreciating the plaster-work (as such) of the whole range of Mohammedan domestic and ecclesiastical architecture, from the days of Ebn Touloun to those of Boudbid el Chico, since during all the many centuries intervening between the reigns of those sovereigns we find, in stucco, admirable hand-worked patterns, executed with a precision and force at least equal to those we find in the works of ancient Egypt itself. There is one more aspect under which this subject is interesting to us. In the present day there exists on all hands great desire for novelty in the main features of design, as well as in the decoration of buildings. I believe that legitimate novelty in this direction is not to be obtained by a mixing up of styles, or by confusing them together; it is rather to be found in the development in new directions of technical art, which, if they have not already done so, may in the future be made to minister to the operations of building and decorating. It was by development in this direction that the Arabian found strength, novelty, and completeness of style and as they did, so may we do. When I look at their lives, I see one direction at least in which we have been for some time so following an Oriental lead, and I note in them a very legitimate and excellent form of decoration, calculated, I think, to effect a great change in the aspect both of our exterior and interior architecture. I know it has, to some extent, done so already, and I believe it will do so yet more. I see also in this variety of Arabian woodwork, involving an apparently very intricate, though really simple, combination of differentiation of pattern, nothing which any skilled workman with the least desire to do what has been so well done, and what seems so thoroughly congenial with a just idea of good joiner's work, would not be able to do perfectly in this country at the present day. When we look at the yards, materials and processes by which elaborate and beautiful works were carried out in almost every technical art by the Arabians, it is difficult to imagine why the same good work should not be designed by us architects, and wrought by our artificers, who should learn to take a pride in their calling, and be honoured in proportion to their talents, as the Arabian workmen were. All that is wanting is that the same simple taste, good judgment, and technical energy should be bestowed upon our designs and upon our works. Men are yet to be found in India and Persia, in Cairo, and in Spain—who, in some degree, with the theory and practice of the most ancient Arabian tradition. I myself saw in Granada, only a few months ago, a man working with a lathe of the kind described by Mr. Crace; the only difference was, that the lathe I saw consisted of a long iron bar, with "gudgeons" sliding on it, and capable of being fixed by screws at

any distance apart. Between these gudgeons a piece of wood was so held as to be capable of grating, with the least possible amount of friction. The workman sat down with this in front of him, and kept it working with a bow, similar to that constantly used by Indian turners, which twisted the wood round rapidly on the iron gudgeons. This he did with his left hand, while with the right hand he steadied himself, changed his cutting tools, and measured from time to time the perfectness of the work he did. For what right hands usually do with ordinary lathes, he substituted his right foot, which exhibited an elongated great toe just like a thumb, and a metatarsal development such as I never saw before. He held the chisel lightly between the great and second toe, and seemed to use his foot just as easily as we ordinarily use our hands. It was curious to find at Granada such a retention of the simple machinery and method by which it is probable that the Moors executed the bulk of their larger ornamentalations in wood, dependent upon the lathe for the fashioning of their leading forms. I trust I may be permitted to allude to one more point before I sit down; and that is, the opportunity for surface decoration which was afforded by the large wall surfaces in which the Orientals have always delighted, and by their simple arch soffits and vaults, rarely set up by mouldings which were placed so as not help thinking that these remarkable "reversible" patterns which we see here, and the effect of which is invariably excellent, were probably originally due to the desire to economise labour and cost, by making one piece of material serve for counterbalancing the inebriating the parts into which was cut, to produce patterns in different coloured materials without the waste of any portion of material. At the same time I cannot but consider that, speaking theoretically, patterns so formed appear to be in strict compliance with that which was, and should be always felt to be, a bounded duty to carry out in coloured decoration, viz., equalisation of superficial areas of contrasting colours in the design of patterns intended to convey a sense of tranquil beauty. The principle was so less important when the contrast was intended to be effected by the difference in colour, or by variety of materials than it was when the effect was intended to be produced by contrasting colours. Equalisation was demanded of the light and dark shades. It is such regular balance which keeps ornamentation quiet, and which gives to it its dominant aspect of repose. Balance, it should always be remembered, is just as essential to repose in decoration, as equilibrium is to security, and its appearance to a sense of security, in structure.

MODERATION IN RESTORATION.

Sir,—A variety of thoughts, hopes, and aspirations were engendered, upon a recent visit I paid to some of our cathedrals; there were more than one very old friend among them, friends whose aspects I had hoped never to see changed for the worse, friends who had always seemed to greet me with the same old look of contentment and intimacy, and in whose embrace I forgot the busy whirl of the present, and betook me to the days when the care of the hour was quite sufficient to fill the whole of my thoughts, and the chance of a broken neck from a parapet or a broken head from a verge was not fearful enough to prevent certain vigils of meditation, when I felt that other bold spirits used to pay to the sacred fane.

Alas! that such things were necessary; that these old sentinels of religion seem one and all to have become imbued with the celebrity of the wonderful power of Madame Tenebris; they seem to believe that their charges are safe, and that their strength has failed. They have held a chapter, they have put resolutions, they have carried exemplary amendments, and they have demeaned themselves in a most extraordinary manner. Stormy discussions have taken place, fiery words have been uttered, wisdom has been discomfited, and restorations and the great work has been carried. One fine old fellow, who seemed as firm on his pins as ever, drew attention to his teeth: alas! they had been drawn, his articulation was indistinct, and the food which he took did neither credit to the doers nor good to himself, and the great work of the day was vanished. Another ancient and honoured individual pointed to his eyes; they had gone out, those orbs whose brilliant glories had once flamed all the colours of the rainbow over all who came within their influence, were represented by empty sockets; and so one after another drew

attention to his failings, and the heralds were commanded to proclaim that SS. Peter, James, John, Andrew, Michael, Nicholas, Bartholomew, &c., were about to be made beautiful for ever (?).

This Rachelian process has now been going on for a sufficient length of time to enable one to judge of its success in nearly all instances. In the judgment upon all counts in favour of the enamelling, renewing, exchanging, reversing, repainting, restoring process?—who will say. But where a professor commences operations without well-defined rules for his guidance, it will not be difficult to predict failure somewhere. Now, however perky my old friends may look, glorying in the new, glistening, brilliant glass eyes, renovated mouths, restored joints, and new complexion, many of them have lost that solidity of character, that majestic presence, which at once charmed and awed the beholder. May we hope that these attributes may at some future time return, and that all spirit, all fire, has not been improved and restored out of them. The first old friend that I met at the Gloucester School of Art, I had paid periodical visits, had before marked the commencement of some processes, the completion of others, and had looked forward with some amount of dread to the continuance of the doctoring. I had noted the glorious south aisle, with its rich decorated windows, with their carved and gilded tracery, and the profusion of ball flowers, the massive and noble buttresses which flanked the wall, and exhibited in their fertility of design the hand and eye of the master. These windows and buttresses are without parallel,—were, I had almost said. Some years ago, the wall, which had been peaked out by the groining, and the very design of the thing was absolutely necessary to be done, and it was done. The inside face of the wall was made perpendicular, the windows were restored, and now the buttresses are undergoing the same process.

In reproducing, say, the moulded jamb of a window, the great point is to obtain a profile of the mouldings as they left the workman's hands four or five hundred years ago; not their present profile, for naturally the effect of time has been to alter the original form considerably. The most projecting portions being more exposed to all the storms of heaven, will have been worn away greatly, whereas the hollows with the protection of their very recesses, will have suffered little or nothing; indeed, I have often found that instead of being deeper, the dust of ages from the exposed parts of the same jamb, as well as from the ground and surrounding objects, has formed a hard coat of some thickness, made the hollow smaller, and thus materially aided in the retarding process. The same portion of jamb, when fixed in its place, would exhibit two peculiarities: the projecting members would come beyond the face of the old; the hollows would recede behind it. This is all so natural, that I may be told to teach a female progenitor of mine how to extract the meat from an egg; but when I see the principle of restorations so often ignored, I think I am not wrong in inviting attention to it. Should a richly-moulded doorway have to undergo in the course of time, say half a dozen restorations, the sixth would triumphantly end, in all probability, in a bald splay, had care in obtaining the original profile been neglected, and simply a mending or joining of the old to the new. Consistent with the principle should be the rule, and a clerk of the works appointed who would inflexibly reject every stone not coming up to a perfect standard. I say this because I have found, however willing a builder may be to have genuine work done, however clear and correct an architect's instructions may be, men will take advantage of the opportunity of going wrong, and making an even face, arguing that their work looks better.

In connexion with the work at Gloucester, I may mention one thing which may interest church restorers: a similar point has been discussed in the pages of the *Builder*. The windows between the pinnacles and the triforium, as I have said, are rare specimens of decorated work, with one exception, and that is the seventh or easternmost one. Here portions of the original three-light decorated window have been worked up into a wretched Perpendicular insertion of four lights. When the repairs were started, I believe the decision was made, and the architect determined to replace the decorated work. Permission was obtained to fill this with stained glass; templa were made, and a costly and successful window produced in Munich, by Chevalier Max Ailmüller, but a change of deans or architects taking place in the mean time, it was

discovered that the condemned insertion was a fact. The cripple is to be patched; and, awaiting a permanent habitation, the glass can be seen at the Gloucester School of Art: it well repays study, is superior to German glass generally, and the correctness of the architectural adjuncts is as praiseworthy as the mastery drawing and harmonious colour.

The interior and exterior of the choir were crowded with scaffolding and workmen, and the service had to be held in the grand old nave, where much praiseworthy work has been done simply in clearing; it has been more than once described in the *Builder*, who seems to have an eye for everything. May it still continue to keep a right rein upon restorers, and to check sometimes the too great enthusiasm of building chapters.

M. U.

EMIGRATION.

ACCORDING to newspaper reports, the country is in a state of great agitation and excitement on the subject of emigration; and having travelled a little abroad myself, and visited many of our colonies, I shall be glad if you will allow me the opportunity of making a few observations on the subject. The movement is a matter of grave importance, and one attended with serious consequences to this country, to the intended emigrant, and the colonies; and therefore should be well considered.

There is, doubtless, a fine field for extensive emigration in many of our colonies, to bring into cultivation the vast extent of uncultivated land that exists there; but the class of persons to be sent out should be those well adapted to agricultural operations, or who possess the physical ability and aptitude to acquire such knowledge quickly when taught the respective modes of cultivation adapted to their particular produce. On my recent return from Honduras I was brought into contact with several American farmers, who, on returning from that colony to the United States, whence they had emigrated during the war, or at the termination of it, and, though brought up as agriculturists in the States, they failed to carry out the cultivation of tropical produce, perhaps from the want of capital: they had sunk their little all in the colony, and, on returning to their native land, they found themselves in a state of utter poverty, debt, and despair.

Although that colony has a very extensive tract of uncultivated land, and is covered with bush, no encouragement was afforded them in their pursuits, no effort was made to keep them in the country, or inducement held out for them to remain; and so it will be with any emigrants we may send out, unless they are specially adapted to the wants of the colonies, or possess a sufficient amount of capital to embark in agricultural operations on their own account, or are assisted with money by capitalists until they have acquired a thorough knowledge of the country, its climate, and proper mode of the cultivation of the produce; and that knowledge will require some time to acquire,—say two or three years,—until they are thoroughly established.

Most of the uncultivated land in our colonies is covered with forest and bush, and the trees are of such magnitude, and the forest and bush so thick and dense, that they would astonish the people of this thinly-timbered country. They would require advice and assistance as to the best method of clearing and preparing the land, which none but men experienced in such works or backwoodsmen would understand. Of course they would be supplied with and take out with them all the necessary tools, implements, &c., required for agriculture, building, and other operations, because they are not always to be obtained there, or of the best kind; but if they can be procured there they are generally at an exorbitant price.

In the expeditions I have been connected with, I have always taken out every tool, implement, &c., required for any operation; and, in fact, at all times the resources of the country, but preparing myself for any and every emergency.

But, although tendering this advice on the subject of emigration, I by no means approve of the movement on the extensive scale contemplated, particularly if we send out those that our colonies require, who are just the class of persons who would produce the most good to our country, and endeavor to show. Have we no waste lands in Great Britain that are capable of cultivation, which would well repay the outlay of the employment of these people? Have we no public works, railways, or tramways required in

this country to extend and complete our system, so as to facilitate commerce, and add to the wealth of the country, on such a plan as would well repay the cost? Are there no sea embankments required to protect our coast in various places; or is our territory to be left to the mercies of the wild wind and waves, because we are not, as poets allege, "as iron-bound coast everywhere"? Is all our land in the best state of cultivation possible? Is science invoked everywhere, and the earth not capable of producing another blade of corn? Is no draining or irrigation required, so as to produce hereafter heavier and better crops? Or are we to pay away millions sterling annually for that which produces the staff of life, and which we might as well cultivate at home? Are all our rivers in the best possible order for navigation and the drainage of the country of its pure water? Are our town improvement works in that happy state of forwardness as to need no further employment of labour, so as to properly dispose of our town sewage, and to prevent the pollution of the water, and thus to get rid of one of the causes of pestilence in the country, and to render the delightful shelving banks of our rivers habitable? Are our water-works completed everywhere? Do we not require an extensive series of reservoirs on all our rivers, so as to conserve the rainfall in the seasons of drought, and to supply the want through all dry seasons, even the driest known, for the growing necessities of the population and for agriculture? Remember 1863, its dry season and scarcity of water. Or are we to be hereafter as reckless with our rainfall as we appear to be with the bone and sinews of the country?

Since the introduction of railways, we are not our public roads, and the disease to us. We are drifting into that state of normal difficulties of transit of a century or so back that drew from obscurity the talents of a Modam and a Telford to mend our ways, and to force on civilisation whether we would or no. Look at our cities, urban and suburban, and this picture on the wall. Who can answer these questions satisfactorily? And what a glorious field is there for the Government, the capitalist, and the wealthy philanthropist. We are sending out our useful population and scattering them before the four winds of heaven to do that in our colonies, and for foreigners, which we urgently require at home, and which we might as well do at home. We think of our neighbours, and let us take up many of the important measures I have suggested above, and thus profitably employ capital at home, and at the same time afford employment to an orderly and a contented people, even with the bitter dregs of poverty, and thus add materially to the happiness of the Anglo-Saxon, the national honour, and the strength and welfare of the country.

But if there should be any doubt on the subject, let a Commission of eminent philanthropists and engineers be appointed to chalk out a course for the Government, the Legislature, and the country. Surely some such step is as necessary in this emergency as the expenditure of millions sterling during the Irish famine, or of twenty millions sterling to abolish slavery in our colonies, and to release men from a servitude under which they enjoyed privileges which but few of our working classes possess, and which had the effect of literally ruling an immense portion of her Majesty's dominions. I have no hesitation in saying that if, instead of embarking such large sums of money in foreign loans, to aid, as alleged, foreign wars, or possibly to strengthen an enemy and find him sinews of war the better to cope with us in the field, the money were spent in useful works at home, it would be a far more judicious use of employment. All that is required is that those who by good fortune have amassed wealth from social position or success in trade and commerce, should well consider philosophically that they hold it in trust for the good of the community at large; that money is useless unless it is properly employed; and that the best method in such a way that will confer the greatest benefit and happiness on the greatest numbers.

If the Government and those humane and able men who are now doing all they can to promote emigration would endeavour to introduce and stimulate some of the various schemes now shadowed forth, they would confer vastly greater benefits on this country than by raising hundreds of thousands of pounds, and freighted ships with perhaps unwilling cargoes to seek fresh homes and fields and pastures new; and the intending emigrants, and many thousands besides, now on the verge of

perpetrator, would hail them as noble benefactors of their country's welfare, the worthy saviours of their hearths and homes, and brave peers of English and pillars of the State. It is not the way to meet the cry of the distress and anguish too prevalent in this country, and to clear the streets of the reeking misery occasioned by the want of work, by closing up the public dockyards and other establishments, or by corporations—Liverpool for instance—expending sanitary and improvement works for the sake of saving a petty rate or two; for these are times, of all others, when every encouragement and assistance should be given to the helpless masses to tide over this great national calamity, until better times dawn, and until the Government, on great occasions, men of wealth, and well-to-do, soften and relent a little, and, by putting their shoulders to the wheel, set in motion that machine which alone could spread comfort and happiness through the country, in the full tide of employment for willing hearts and hands, that a liberal embarkation of capital would produce, in useful undertakings, throughout the length and breadth of this small proportion of her Majesty's vast dominions.

I fear I have trespassed at too great length on your valuable space; but the questions raised are important ones, and cannot be too strongly and forcibly impressed on the minds of your readers and those able and willing to lend a helping hand to mitigate the heavy calamity that now weighs upon the vital energies of our common country. B. BAYLIS.

THE BELGIAN STATE RAILWAYS AND TELEGRAPHS.

A PAPER on the passenger traffic of the State railways in Belgium, with remarks on the telegraphic system, by M. Corv' Vander Maeren, was read and discussed at the last meeting of the Social Science Association. From the statistics quoted in this paper, it appears that the total of the lines in working at the beginning of 1869, in Belgium, was in length 2,730 kilometres, or 540 leagues (about 1,640 English miles), divided as follows:—

Kilometres.	
Worked by the State.....	982
Worked by companies.....	1,748
Together.....	2,730

The amount of the capital which the Government had expended for the construction of rail ways up to January 1, 1868, was together 262½ millions of francs (about 101 millions of English pounds sterling).

The cost of construction of the State railways amounts to 469,647 francs (about 16,400l.) per kilometre (or five-eighths of an English mile), divided as follows:—

Francs.	
Railway (the cost of the lines).....	236,424
Buildings, stations, &c.....	67,764
General expenses.....	8,665
Rolling stock.....	96,795
Total cost per kilometre.....	409,647

Or at a cost of 26,300l. per English mile.

The general result of the working for the year 1868 is as follows:—

Francs.	
Total receipts.....	38,314,509
Total working expenses.....	24,826,964
Surplus.....	13,487,545

Or about 540,000l.

These 13½ millions of francs profit upon the workings of 1868 give 5½ per cent. upon the whole capital expended upon the railways (say upon 262½ millions of francs).

This figure shows that the railways, which have done so much for the country, both in a political and economic point of view, have not only been self-sustaining, but that their general pecuniary result is a profit since their origin of nearly 57,000,000 francs, or 2,280,000l., including interest on loans, sinking-fund, and all incidental expenses.

The lowest rates of tariff have been found to be the most productive. The differential fares introduced by the decree of the 20th March, 1860, and now operative, instead of the *fares* rates of 8, 6, 4, and 2 centimes per kilometre substituted upon the bases of those rates a system of reduction, decreasing the rates with increased distances. The fares, however, are not so low as they once were, neither are they so profitable. The telegraph in Belgium is, like the post-office and the principal lines of railway, worked by the Government under the direction of the Minister of Public Works. The tariff established

by the State at the onset was calculated, by dividing the country into three radii, sores, or different distances, fixing the rates respectively at 2f. 50c. and 5f., and 7f. 50c. for twenty words (2s., 4s., and 6s.).

As the use of the telegraph increased, the tariff was reduced time after time, until the last of December, 1865, when the uniform rate of 50 centimes (about 6d.) for the whole of the country was introduced and carried out with great vigour and success. Previously to the 1st of December, 1865, the rate for simple telegrams of twenty words was 1 franc. This was for telegrams of the interior of Belgium.

The telegraph in Belgium has long since completely paid off the entire expenses of its first establishment. Beyond that it shows, on the 1st January, 1869, in the general account, a net profit of about 700,000 francs (28,000l.).

"FEATHERS" IN MAHOGANY AND OTHER WOODS.

We have been asked by a correspondent for an explanation of the so-called "feathers" in the grain of mahogany, satin-wood, &c.: thinking other of our readers who wish to do with woods may be interested in the subject, we offer the following explanation:—

In the structure of all woods used in building, there is, firstly, a series of vessels of woody tissue surrounding the heart of the tree, having a vertical growth, and arranged in annual concentric circles; secondly, there are certain hard woody growths, called the "medullary rays," radiating from the heart, and consequently more or less horizontal; these vertical and horizontal growths are intimately but regularly platted and interwoven together, to give strength to the trunk, and thus far all is regularity. Now, where the vessels burst through the regular arrangement is upset, and the above-mentioned woody vessels are disarranged, and pushed at different angles. When the tree is cut down and sawn horizontally across amongst these branches, these disrupted horizontal and vertical vessels (of grey colour, be it remembered), are seen cut at every conceivable angle, and an ornamental "feather," more or less extensive, is the consequence. These feathers do not exist at the base of the tree, because there are no branches there to disturb the annual growths of the wood (minute feathers do indeed exist at the very heart, and those were caused by the growth of leaves and twigs when the tree was a seedling or little cutting). "Feathers" are not seen in deal because the fir is a straight-growing tree, without branches, in the portion of the trunk used in commerce. "Feathers" are seen most abundantly in "pollards," for the simple reason that after the top of the tree has been sawn off, an immense growth of branches is always induced disturbing the tissues in every imaginable way: the action of the light on the "feathers," adds greatly to their beauty after the wood is polished.

MILK.

A LARGE establishment has just been completed in the Moscow-road, Baywater, for the Aylesbury Dairy Company, Limited, which deserves a passing notice, from some peculiar features in its arrangements and construction. The business of the company is the delivery of pure country milk day by day throughout the London districts; and when we say that already it supplies daily 1,400 families, entailing the necessity of making more than 20,000 vessels per week, it is evident that some peculiar arrangements are required. The objects of the company speak for themselves. London milk has long been a proverb, and the mere fact of a responsible body of respectable men guaranteeing exclusively for the pure milk delivered, and inviting any and every test of their sincerity, is of itself a great advance, in a commercial point of view.

The company was established about four years ago, on a small scale, deriving their supply at that time only from the district of Aylesbury; but since then they have extended their operations into Bucks, Berks, Wilts, and Oxfordshire, and are not dependent on any one particular line of railway for supply.

The establishment in Moscow-road is about 100 ft. wide by 130 ft. deep, and is occupied exclusively for the purpose of the company and their employees, all of whom, about forty in number, reside upon their premises. The early

and late hours required (five in the morning, all the year round, up to twelve at night for the men attending the late trains), render this a sine qua non.

A large area, partly covered with glass, occupies the centre of the space, where the loading and unloading of the vans is carried on at a platform 100 ft. in length; and around this is disposed, in various floors, dwellings for the men, a house for the foreman, a residence for the secretary, accommodation for the clerks (in this case young ladies) residing on the premises, a very complete set of offices for the transaction of business, stabling for twenty horses, and accommodation for the vans; as they are called, but which are, in fact, four or five and four wheels, drawn by one fast-trotting horse, and more resembling a dog-cart than a van. The harness is arranged for the storage of the milk, and a very capital reading-room for the men forms part of the establishment, which has thus a thoroughly domestic character, though so extensive in its operations.

The buildings have cost more than 6,000l., and have been carried out from the designs of the late Mr. Williams, of Montague-street, Russell-square, by Mr. Under, the contractor, under the supervision of Mr. G. Taylor, Mr. Williams's successor. The style of the buildings is in the Philip's construction, are partially introduced.

The building will be open for public inspection from the 19th to the 26th inst.

WORKMEN IN NEW YORK.

"THOMAS CONNOLLY, Stonemason," has addressed another letter to the *Daily Telegraph*, wherein he says:—The weather has been extremely fine and open here since we arrived—much finer weather than I ever experienced in England at the same time of the year; yet most of the works have been stopped these two or three months past, and fully 30 per cent. of the working population are now unemployed, and will, in all probability, so remain until April or May. Still, in my opinion, they may be set to get through the winter better than the unemployed in London, owing, in a great measure, to the bountiful resources of the country. The season just passed is considered to have been one of the best since the close of the war, especially for those engaged in the erection of buildings, which, by the way, the year is a different matter from that common in England. The brick fronts are all put up after the outer walls of the house have been built, and are usually surmounted by a cornice made of zinc. The roofs are flat, covered with tin plates; and most of the stone fronts are merely a veneer of stone, tied into the brick-work with iron clamps. Labourers get from 1l. dol. to 27s. 6d. per day of ten hours; bricklayers 5 dol. a day of ten hours; but the men who lay the front bricks, usually by the piece, earn as much as 7 dol. a day. Plasterers get 41 dol. for eight hours, the number they work per day. Joiners have 3½ dol. to 4 dol. for ten hours; a great deal of the woodwork is done by machinery, and their principal task is to put it together and fix it. The carpenters' work, or framing, is done by Dutchmen—as all Germans are called here—at about 3 dol. a day. Painters get 4 dol. a day of ten hours in the summer, and 3½ dol. in winter. The stonemasons generally employed here are granite, from Maine; a chocolate-coloured sandstone from Connecticut and Jersey; a fine-grained drab-coloured sandstone, from Ohio and New Brunswick; and a bastard white marble, raised at Tuckahoe, about fifteen or twenty miles from New York. Those stone cost about 1½ dol. a cubic foot. The stone-cutters, when employed by the day, receive 5 dol. for eight hours; but a great deal of their work is done by the piece, according to a book of prices agreed on by the employers and the men. If a man can earn his wages, or more, he is set to work by the day; if not, he has to work by the piece, and earn what he can. Owing to the high price of materials, builders dispense with stone as much as possible, and construct the fronts of warehouses and many other large buildings of brick, or iron, or one-half the cost of stone. These iron fronts are well designed, in every style of architecture, and are painted to imitate white marble. I have invariably found, that when a trade assumes the character and dimensions of an industry, the men are not better paid in England; in fact, sometimes less, when the purchasing power of the money is taken into account.



MR. A. J. BERESFORD HOPE, M.P.

First President of the Royal Institute of British Architects.



CARVED BENCH ENDS IN CHAPEL OF HATFIELD HOUSE, HERTFORDSHIRE.



CHURCH FOR NORWEGIAN SAILORS, ROTHERHITHE.—MESSRS. GILES & BIVEN, ARCHITECTS.

THE SCANDINAVIAN CHURCH,
ROTHERHITHE.

So numerous are the Norwegian and Swedish seamen who come to the port of London, that it is proposed to build a church for them in Rotherhithe, and we have engraved the design for it that has been made, under the direction of a committee, by Messrs. Giles & Biver, architects, though, as we now understand, it may possibly be somewhat altered before the intention is carried out. In plan it is hexagonal; the accommodation is for 250 persons, and a small gallery could at any future time be added. There are two distinct reading-rooms adjoining, for the use of merchant seamen and captains; and these rooms, also, could at any time be thrown open by means of a movable screen, so as to increase the accommodation of the church. Two living-rooms are provided for the use of a resident official, in whose charge the whole establishment would be. The building is of a simple Gothic character; the material for the walls would be brick; the roof covered with slate. The exterior of the church is to be faced with malmes. The apse of the chancel is semicircular, and lighted by small lancet windows.

The somewhat peculiar plan was necessitated by the shape of the ground; but as the committee have now obtained the grant of a large piece of land, a change of plan to some extent is contemplated.

BENCH-ENDS IN THE CHAPEL, HATFIELD HOUSE.

The Marquis of Salisbury has just now made some alterations and additions in the private chapel of his mansion (Hatfield House, Herts). These alterations include an altar-rail, a reading-desk, a double-ended chair, a light rod-screen, and some bench-ends. All these fittings are executed in oak and teak, inlaid with ebony and other woods, and were designed by Messrs. Carpenter & Slater, architects. Mr. James Forsyth has executed the carving, under the direction of the architects, in an admirable manner. The delicacy and finish of the details of each design are remarkable. Of three of the bench-ends, which are very elaborate, we give representations.

The rod-screen is in the Elizabethan style, very light in construction. It is composed of fifteen arches, supported by slender shafts, enriched with carving. The caps are of teak, and highly wrought. The entire arch, which forms the entrance, is about double the width of the others.

THE SEWAGE QUESTION.

Leek.—The clean and good-looking little town of Leek promises to become, in vital statistics, a model town to the country. The sewerage works have been in existence nine years. The beneficial results have been great. The annual number of deaths in the decade ending in 1860 was 29 to the 1,000; during the last decade it was 24; and the average ages of the dead have risen from 24.8 to 32.6. Thus the average duration of life has been prolonged by nearly one-third. 492 persons are now alive in Leek, who had the ratio of deaths in the first decade continued, would now have been dead. These who died during the last decade lived, in the aggregate, 16,983 years longer than they would have had the average age at death during the previous decade been continued. Had no sanitary improvements been made, many would have been widows and orphans whose husbands and parents are now living. There has been a corresponding decrease in sickness, the money savings of which, reckoning each case at five shillings a week for 50,752 weeks, amounts to 12,688*l.* Of the sickness prevented 16,917 weeks are saved to the workers between 15 and 55 years of age, being a saving of 6,343*l.* 16*s.* 6*d.*, even though a man's wages were only 10*s.*, and a woman's 5*s.* per week. The funeral expenses, at 5*l.* each, amounted to 2,460*l.* The direct money saving was 21,491*l.* 17*s.* 6*d.*, not to speak of the unspeakable advantages of every kind from improved health and prolonged life. Thus the drainage of a town not only benefits the owners of property, it benefits the poor above all persons.

Brighton.—That there will be opposition to the Brighton Intercepting and Outfall Sewers Bill appears from three petitions lodged against it; one by the best Hove Improvement Commissioners, another by the Brunswick Square

and Terrace Commissioners, and a third by Vallance's Trustees. The first petitioners submit that they and the inhabitants of the said district will be most injuriously affected by the provisions of the Bill; in various reasons adjacent to it; and, at least, that a better and more efficient and less costly scheme can be devised for draining the town of Brighton and the district of the Brunswick Square and Terrace Commissioners and of the petitioners.

Leicester.—A report by Mr. Baldwin Latham, C.E., on the proposed utilisation of the sewage of Leicester, is about to be placed before the public. The local Advertiser thus refers to some of the chief points in the report:—

"The first consideration is, how to get the refuse of our large town on to the adjacent lands. Happily, the provisions of the town and neighbourhood are admirably suited to this object, quite one-half the area of the sewerage portion of the town being at a level of, at least, 20 ft. above the lowest portions of the district. This favourable circumstance Mr. Latham would take advantage of by dividing the town into two areas—the high-level and the low-level; the former he would surround with an intercepting series of dimensions sufficient to carry away 1,000 tons per hour, in order to have the means of disposing of the refuse should it be carried direct to the river; disconnecting the surface-water drains from the sewerage, and he would connect the sewerage directly to the works in the Abbey Meadow, where, by an alteration of the machinery, he would pump it up to the moderate elevation of the central works of the proposed intercepting sewer, which will be quite sufficient to insure its distribution on the land at no remote distance from the river. By this means the working expenses of pumping the sewage to the land would be greatly reduced. Mr. Latham was of opinion that about 80 acres would be wanted. But the same authority states that there are 1,300 acres between Thurmaston and Bileby entirely cultivated, and that the higher ground from the river to the low-lying areas between Leicester and Thurmaston there are 650 acres that would be reached by direct gravitation from the river, and that by pumping the sewage to the river. Here is land in proximity to the town, in sufficient quantity for double the present amount of sewage; and the same authority states that the cost of the proposed scheme, at 21,000*l.*, including an annual outlay of 6,314*l.* for working expenses, interest on capital borrowed, and the cost of the machinery for permanent works, the receipts are estimated at 9,750*l.*, thus leaving a very handsome net profit. Should this prospect be realised, it would afford a wonderful contrast to the present system, whereby loss is sustained of 1,300*l.* a year, while our river is polluted, and a great deal of annoyance suffered in many districts."

A dairy-farm is suggested in the report as an additional source of profit.

KITCHEN BOILER EXPLOSIONS.

The explosion of kitchen and circulating boilers, in the north of England especially, is at length exciting attention.

At the last meeting of the executive committee of the Manchester Steam Users' Association, Mr. Thomas Schofield, in the chair, in the absence of the president, Sir W. Fairbairn; Mr. L. E. Fletcher, chief engineer, referred to the number of fatal household boiler explosions that have recently occurred. Owing to the number of them which had been lost by such explosions during the recent frost, it was thought important to circulate "at once some suggestions with regard to the cause of these disasters, with the hope of preventing their recurrence should the frost return. Under these circumstances the subject was only briefly touched on, the chief engineer hoping to treat it more fully, with the aid of illustrations, in his next ordinary monthly report.

The cause of kitchen or bath boiler explosions, he said, is very much misunderstood, and hence the constant recurrence of these disasters. They are wrongly ascribed to the boiler being full, a few drops of cold water into a red hot boiler. They are attributed to the thaw, whereas they are the result of the pipes being sealed by the frost. That the sudden introduction of cold water into a red hot boiler will not cause an explosion is a question of preservation of heat, to produce an explosion was shown by repeated experiments, fully described in the chief engineer's report for January, 1867.

The boilers that explode on the occurrence of frost are on the circulating principle. They are connected by two pipes to an overhead cistern, instead of a tank, in that of proper application, a fire to the boiler, as much as the water becomes heated it rises through one of these connecting-pipes, while the cold water, by its superior gravity, descends in the other, so that a constant circulation is kept up as long as the fire remains in the boiler and the pipes are full, the passages open, and there is any water left in the overhead cistern. As long as these pipes are open they form a natural safety-valve, and afford a pressure due to the height of the column of water, and no more; but as soon as the frost seals them up the pressure accumulates as long

as the fire burns, when explosion becomes merely a question of time. This is the simple cause of these disastrous explosions, and that being so, it is clear that all that is needed to prevent them is to adopt the very simple precaution of fitting to every circulating boiler a reliable safety-valve that will not be affected by the frost. The valve recommended was of the external pendulous dead-weight construction, and, having no lever, bladed joint, wings, or spindle, was not at all liable to derangement. These valves should be fixed in the front of the range, being brought out, if necessary, by means of a connecting pipe, so as to be always in sight, and accessible. If it is once fairly recognised that the cause of these explosions is a gradual accumulation of pressure, added Mr. Fletcher, it will not be long before some suitable measures are contrived to meet it. To set a boiler in a kitchen alongside of a brick fire, without a safety-valve, or something equivalent thereto, is very much like putting a cask of gunpowder into the oven to bake.

Since our last note of cases of kitchen-boiler explosion, one has occurred at St. Abbeys, near Sheffield, and another in Derbyshire. In that at Abbeydale two men were killed while at breakfast; and in that at the Rectory, Long-Lane, Derbyshire, one woman was killed, and two others were terribly injured.

A WORD ABOUT THE THAMES
EMBANKMENT.

Sir,—I believe the Thames Embankment will illustrate two proverbs: 1st. "Penny wise and pound foolish." 2nd. "The ship will be spoiled for want of a pennyworth of tar."

First, as to the foistway. Can anything be more mischievous than what might be seen in my few sunset promenades in London. It is about one-half the width it should be. It is of more importance to London as a recreation-ground than the opening of a new park in any situation would be. Think of the numbers of poor women and children who cannot go out of London, but who might on any fine day stroll upon the Embankment for an hour. Think of the crowds who, in summer time, go by steamer, and who would go in yet greater numbers, if the river were made as it might be made,—the most beautiful thoroughfare in London. Think of any public occasion, like Lord Mayor's Day, the arrival of the Belgians, a coronation, a great public funeral, the entry of any distinguished potentate, any public procession. Can it be contended for one moment that the present proposed width of roadway and footway would be sufficient for such a purpose?

The Thames Embankment, properly carried out, should be, for the poor women and children of Southwark and Lambeth, Seven-dale, Holborn, &c., what Hyde Park is for the upper classes. It should be, and will be, their Sunday promenade. The simple question is, shall it be a great public boon, giving health to these poor creatures who so much need it? or shall it be a great failure, as it will be, if built upon, as proposed? A huge piece near Westminster Bridge is already appropriated for private gardens, at a great sacrifice, as far as the public, and especially the poor, are concerned. R. J.

THE TRADES MOVEMENT.

The movement for the reduction in the hours of labour in the engineering and building trade, just set on foot by the carpenters, has been taken up by the other branches in the trade, and at a meeting of operatives—painters, bricklayers, masons, joiners, plasterers, &c.,—held at the Lord Palmerston Tavern, Chelsea, on Saturday evening last, a resolution was formed to present the nine hours movement, and the following resolution was adopted:—

"That an invitation be given to the various societies in the building trade to send delegates to the various societies for the purpose of co-operating with it, and making a united effort of both unions and non-unions to obtain the reduction of the hours of labour to nine per day, the present depressed state of trade rendering it an advisable opportunity for the attainment of that object."

This society is quite independent of the delegate meeting of the carpenters and joiners, exclusively, who have drawn up the following new code of working rules for that branch of the trade:—

"That the working time be fifty hours a week, namely, nine hours on the first five days, and five hours on Saturday; that the wage be 8*d.* per hour; that piecework be

abolished; and that all overtime be paid for at the rate of time and a half up to 10 p.m., and double after that hour. Three months' notice to be given for the alterations. All disputes to be settled by arbitration.

A case has come before the Poplar Board of Guardians which illustrates the working of the Shipwrights' Union in Poplar. Mr. Truill, a shipowner, having a vessel under repair, at Millwall, applied for some shipwrights to execute the work, but, though he offered 6s. 6d. per day, none would accept the engagement under 7s. It was then suggested that among those in receipt of relief from the guardians there might be some willing to take the work. Accordingly, the relieving officer of Poplar examined the list of outdoor paupers, and found two shipwrights who were in receipt of outdoor relief. He sent for them and acquainted them with the facts, and even accompanied them to the dock. But they declined the offer, saying that they would gladly work for 4s. or 5s. a day, but that the work now offered them was "old work," and, as they were members of the Shipwrights' Union, they could not work for less than 7s. a day. On the men coming before the Board of Guardians to ask for a renewal of their relief, strong indignation was manifested at their conduct.

LONDON CORN EXCHANGE COMPETITION.

We give a list of architects who are invited to compete for the Corn Exchange, and have consented to do so. Mr. Whitehead, it will be remembered, declined to compete, he saw so many difficulties in the way as to rights of lights. The drawings are to be sent in on the 31st of this month.

Messrs. Taylor, Manchester; G. Scott, Jan.; J. Penscoe; Giles & Biven; R. Heaketh; Salter & Wyatt; Onthbert Broderick; W. G. Caldwell; W. H. Crossland; H. Stock; Banks & Barry; H. Carr; R. C. Baxter; E. A. Gruning; H. Dawson; and G. Trusitt.

LAMP STANDARD FOR THE THAMES EMBANKMENT.

A LAMP-STANDARD has been set up at the landing-place between Hungerford and Waterloo Bridges. It was designed and modelled by Mr. T. Butler, sculptor, and is intended to supersede the ordinary lamp-post, by the combination of artistic composition with allegorical narrative.

The meaning intended to be conveyed by the boys marking the shaft, the one winding up the torch to the other with which to light the globe above, is, allusive to that energetic spirit which characterises the British nation; and the reward of which is signified by the abundance poured forth from the cornucopia. The device on one of the panels below, composed of the caduceus and trident, symbolises the marine commerce and commercial spirit. The other panel presents a bold oak wreath, within which is the date of the opening of the Embankment. The whole is intended to harmonise with the lions' heads, executed by the same artist, which already appear on the river front of the pedestals both on the north and south sides of the river.

The composition is better as seen from front or back than at the side. Should more of the standards be executed it would be desirable to reconsider this aspect of the design. We would observe, however, that it is somewhat massive for a single lamp. It is better adapted to carry a group of lamps.

BUNHILL-FIELDS BURIAL GROUND.

A REPORT of the Bunhill-fields Committee of the Corporation just published shows that for the re-erection of the wall of the ground near the City-road, and for the provision of paths and gates, and the expense not exceeding 1,000*l.*, the tender of Messrs. Browne & Robinson was accepted, and the work had been completed in a satisfactory manner, and within the sum provided. They also gave directions for the construction of a number of paths, so planned as not slightly to interfere with the position of graves, and yet leading to or near the tombs of principal interest. Adjoining the paths they have caused to be planted at intervals on either side an additional number of plane and other trees, exceeding 600 in all. Some of the head and foot stones were in a dangerous condition, and others had sunk into the ground so as to be almost lost

to view. These they directed should, where necessary, be raised and set in upright positions, and upwards of 450 stones have been so dealt with.

Descriptions of certain of the tombs have also been removed, and in some instances the tombs have been bricked up and repaired, where such a course appeared to be imperatively requisite. A plan of the ground and a record of every name and inscription have been made by Mr. George Rogers under their direction, and are to be kept in the Guildhall for public inspection. The total expense connected with the proceedings of the committee is 3,191*l.* 18*s.* 11*d.* Annexed to the report are copies of the inscriptions on five pillars erected on the ground, by which it would appear that it was inclosed in 1665 during the mayoralty of Sir John Lawrence; that in 1855 more than 120,000 bodies had been interred therein, and that it was opened on the 14th of October, 1669, by Sir James Lawrence, M.P. Other pillars furnish the names of the most eminent persons buried there, including John Bunyan, Daniel Defoe, Dr. Isaac Watts, Thomas Fowell Buxton, John Horne Tooke, General Fleetwood, Henry, Richard, and William Cromwell, Thomas Stothard, R.A., Lady Ann Erskine, Susannah Wesley, Thankful Owen, Dr. Thomas Goodwin, and others. Early readers of the *Builder* will remember how often we brought forward the claims of this burial-ground for careful preservation.

THE INCIDENTS OF RATING.

SIX.—Since the subject of rating is receiving special attention this session, it may not be out of place to consider recent legislation on the subject.

First, as to "The Valuation (Metropolis) Act, 1859." I fear the schedule of maximum deductions will lead to considerable unfairness. Take the following examples:—A "C" occupies buildings which would come under Class 5, and from their condition would require the maximum deduction of one-sixth; "B" occupies the adjoining paddock, rightly included in Class 7, and fairly, entitled to an allowance of one-twentieth.

	Green value.	Estable.
Say "A"	£80	£50
Say "B"	10	9 10
	£70	£59 10

Now, assume that subsequently X becomes the occupier of both these properties, they would then come under Class 6, and be entitled to a deduction of one-tenth only—viz. 7*s.* instead of 10*s.* as before, showing a loss to X by way of deduction equal to 33 per cent.

Secondly, as to "The Poor Rates Assessment and Collection Act, 1869." The power to distrain on the occupier's goods would appear to be highly objectionable, as, if he could not pay without distress, he could evade good altogether by taking care to hand to his landlord the rent before it was actually due. Provision that, after receiving the "demand in writing" from the overseers for the rate, he should be obliged to pay all future accruing rent to them until the rate was liquidated, would, I think, have rendered the provision effective; and if the occupier declined to do this, then to distrain on his goods would not be unfair.

W. E. V.

THE TRAMWAY BILL.

THE Board of Trade's Bill to facilitate the construction of tramways, and to regulate their working, has been issued. It provides that certificates authorising the construction of tramways may be obtained by the local authority with the consent of the rate-payers in such district; or by any person, persons, corporation, or company with the consent of the local authorities of such district. The promoters may sell or assign their right, but within three years or less must complete the tramway, and open it for public traffic. Every tramway shall be constructed of such width as may be prescribed, and shall be laid and maintained in such manner that the uppermost surface of the rail shall be on a level with the surface of the road. The promoters may open and break up any road, subject to regulation, and must re-laid the road and pay expenses of repair for six months. The promoters are at all times to keep in repair that part of the road where the tramway is laid. There are provisions as to the pipes of gas and water companies, and for the protection of sewers. The general pro-

visions of the Bill give power to the promoters of tramways and their lessees to use on their tramways carriages with flange wheels, or wheels specially adapted to run on a grooved rail; and the promoters and their lessees shall have the exclusive use of their tramways for carriages with flange wheels, or other wheels specially adapted to run on a grooved rail. All carriages used on any tramway shall be moved by animal power only. Licences to use the tramway may in certain cases be granted to third parties by the Board of Trade. There are also powers with respect to the future purchase of undertakings by local authorities, and for the removal of tramways.

MEDALS AND PRIZES OF THE INSTITUTE OF ARCHITECTS.

THE Council have recommended,—

That the Roman Medal (with the sum of 5*l.* under certain conditions) be awarded to the author of the drawings distinguished by the device of "A Column within a Circle."

That the Institute Silver Medal, with 1*l.* 5*s.* be awarded to the author of the drawings distinguished by the motto of "St. Lawrence."

That in the competition, a Medal of Merit be awarded to the author of the drawings distinguished by the device of "Square and Compass within a Pearl." That the Institute Silver Medal be awarded to the author of the essay distinguished by the motto "Light, Utility, and Progress." That the Student's Prize in Books be awarded to the author of the drawings distinguished by the motto of "Truth."

These recommendations will be considered and determined at a special meeting on Monday evening next.

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

WE are sorry to learn that the First Commissioner of the Works, Mr. W. H. Murray, called on Mr. E. M. Barry to deliver up the plans and drawings of the Palace at Westminster, and to forward all the contracts or correspondence constituting contracts, which at present remain unexecuted. Mr. Barry, in the interest of the profession, will doubtless hesitate before he complies with the first part of these requirements, and will have, in turn, to look to the profession for such an expression of opinion on the subject as may strengthen him in any endeavor he may think it right to make to support its rights.

ARCHITECTS' COMPETITION IN 1769.

A SUBSCRIBER writes,—At page 781 of your volume for 1869, in the article relating to a list of architects who sent in designs for building the Royal Exchange, Dublin, in 1769, I do not observe that "C. C. H." makes any mention of William Newton, No. 5*k.* Was he not probably the William Newton who made the translation of "Vitruvius," in 2 vols. folio, in 1791? If he were a young man in 1769, he would be only of fair age on the completion of his translation twenty-two years after.

I name this, as you invite "waifs and strays" of information about the architects in his list.

FOREIGN WORK.

SIR,—We have at the present time large buildings being erected where a very large portion of the woodwork is imported from far or the Baltic Sea, and it is reported that it is anything but what it ought to be in its construction; but this we are told is free trade, and for England's benefit. Still, if such is the case, it is a great defect, and I believe it can be borne out by facts. We may ask who has the right to import and pay for such English labour, by its great taxation. Then I say English labour has a right to be heard, and receive fair consideration at the disposal of the Government. I would of course not architects' future affected in this question of foreign competition to our home markets? I believe it is. If architects wish their profession to hold its position in the future, as in the past, where architectural beauty and soundness of construction have added so much to their fame, then I ask what will be the result if it is their credit to allow this class of joinery to be used in the construction of our large public buildings, where seasoned materials and sound workmanship are the greatest import both to their own standing as a profession, and to the English public, who have to pay an enormous tax to feed and clothe the unemployed? Is it England's policy to purchase cheap foreign rubbish in the present condition of our labour market? Will it be the policy of the Government to allow the position of the architect to be so lowered, and the answer will be No. Those who pay the materials should have the right to dance.

One word to your correspondent "P. L. D." and "Beesley," who think it justifiable for the building trades to assist their present condition, and to make labour more abundant by effecting a reduction of the tax on wages. Such a policy of political economy I cannot agree. Will the officials of our military and naval departments agree to have their materials made in Russia? Will the iron works agree to work for less? If so, no doubt the building trades will equally agree. Dr. Adam Smith says that the

respectability and fame desired in some professions make up a large portion of reward, both of education and skill; but the skilful operator receives no special mark, and according to the economist must submit to the great fluctuations, in the price of labour, of this, in the opinion of the principal cause of the existence of trade societies,—the fluctuations of labour, for the purpose of appraising it at its fair rate, in consideration of a whole trade. The profits of employers are little known among building workmen, and I presume they would think them rather iniquitous by asking to be allowed to look at their books in reference thereto.

A JOURNAL.

TOWN HALLS.

Scarborough.—At the last quarterly meeting of the Council, a report was read respecting the Old Town-hall property. Three estimates had been prepared by Messrs. Stewart, architects. The first amounted to 790*l.*, and proposed to convert the lower part of the building into two shops, and to effect other alterations; the second (1,075*l.*) provided for the rebuilding of the front with stone; and the third (2,300*l.*) was for a new building, containing two shops, large hall, &c. The rebuilding of the hall was finally resolved on.

Kirkstow.—The town hall and market-house scheme is proving favourable. From the prospectus issued by the company little doubt is felt; but that the movement which the inhabitants have so long contemplated will now be carried out. The names of the committee include most of the gentlemen of influence in the town neighbourhood. The prospectus states that "although the nominal capital of the company is fixed at 5,000*l.*, it is not anticipated that more than 4,000*l.* will be required to carry out the proposed objects." Of this sum more than 3,000*l.* have already been subscribed. A site has been purchased for 1,600*l.*

Epson.—A meeting has been held at Cranford's Kirkstead to take into consideration the desirability of erecting a new Market-house and Town-hall between the Clock Tower and Clay-hill, on the space of ground which the old town pond formerly occupied. The meeting was preliminary to a public one that will in a short time be called. Mr. Treherne, surveyor to the board of health, had a drawing of the new building in the style of erection contemplated. Several suggestions were made and questions asked as to probable cost, how to be defrayed, &c., all agreeing on one point, that it would be most desirable and beneficial to the trade and interests of Epson if carried out. It was suggested, subsequently, that the site could be improved upon by purchasing Albion terrace, commonly called Coffee House-walk, and erecting it there instead of filling up the open space which gives a healthy appearance to the town. The estimated cost near the Clock Tower would be about 3,000*l.*

Cuckfield.—A correspondent of a local paper says: "I understand it is intended to build a new hall on an eligible site near the second session of the Petty Sessions, County Court, and other public business, and I hope it may be made suitable for lectures, concerts, penny readings, balls, &c. This would render our town more lively during the dull winter months, and be a permanent benefit to us also. Should this be carried out, I would suggest whether it would not be worth the serious consideration of the promoters to make an attempt to restore our 'Lost Market.' I can see no great difficulty in the matter, provided a suitable building be erected, which might be done economically by making the hall two stories; the upper one for Petty Sessions, County Court, &c., and the lower one for the market."

CHURCH-BUILDING NEWS.

Bellbroughton.—A meeting has been held in furtherance of a proposal for rebuilding the parish church. It appears that several professional men,—architects and others,—have pronounced the roof unsafe, owing to the destruction, some time since, of one of the pillars which support it. The south wall has bulged out considerably; the north wall is more out of perpendicular than the south; and these two outer walls have mainly been kept from falling by means of an iron rod which crosses the church, and braces them together. Half the church and more is overhanging by a huge gallery, greatly interfering with the sight and hearing of those placed under it; and the whole is filled with high-backed pews. It is considered necessary to rebuild the whole of the church, on one side, with the exception of the two remaining arches and a small portion of the south wall, and it is proposed to add a north aisle. The tower

also requires various repairs and restorations, from mutilations it has undergone. The sum required for these objects is 2,000*l.*, at least. A subscription was opened for the purpose in aid of the scheme, and a sum of about 1,000*l.* has been promised. At the meeting a committee of management was appointed, and other steps were taken.

Carlisle.—The foundation stone of the new church of St. Paul has been laid. The new edifice will be bounded by Spencer-street, to the east, Longside-street on the north, and by two other new roads on the west and south sides respectively. The building will be erected of the Newburgh red stone, and with high-pitched roof, covered with green slates, and will be in the Early Gothic style, having windows with different patterns of geometrical tracery. Within the church will consist of a nave nearly 30 ft. wide, and 73 ft. 3 in. long, divided from north and south side aisles by five Gothic arches of alternate red and white stone on each side, supported by circular columns. Height will be given to the nave by a clerestory above the triforium, containing a series of clerestory windows and tracery. The chancel and apse and transepts will be at the east end as usual, and the former will be 20 ft. 10 in. deep, and the arch dividing it from the nave will be the entire width. The whole of the roof will be of open timber work, and the seats will be open benches. The west front, which will contain a series of Lowther-street, and be visible from it, will have a large north window, filled in with tracery. Two entrances are provided to the church, in addition to a third from the vestry, one being under the tower, and the other at the west end, under the large west window. It is hoped that funds will shortly be forthcoming for the erection of the tower and spire, which are designed to crown the west angle of the church, and a portion of the foundations has already been provided for. When completed the spire will have an altitude of 120 ft. to the top of the vane. The tower will have angle buttresses and four pinnacles above, which will be the belfry windows in an octagonal tower, and above will rise the spire, having high open pinnacles over the spire lights in addition to the larger ones below. The church will accommodate rather more than 600 persons, and has been designed by Messrs. E. Habershon & Brook, of London, architects, and is in course of construction by Messrs. C. & J. Armstrong, of Carlisle, builders, who were under the execution of the work was recently accepted after a competition. It amounts to 2,390*l.* 5*s.*, being a little less than the architects' estimate. The walls are several feet high.

Bilthol (Carlisle).—At a meeting in Bilthol, in support of the cost of the new church there, the secretary stated that he had 2,438*l.* 10*s.* 6*d.* in the treasury, and that the church was about 35*l.* short of the first contract of 2,465*l.* But beyond the contract there were several necessary expenses, as commission, salary, lighting, heating, and granite (previously provided). The cost of these would amount to 400*l.*, or 460*l.* There would, therefore, still be some 600*l.* to raise (exclusive of the cost of the tower, estimated at 1,000*l.*). The church was rapidly advancing.

Upper Easton (Bristol).—The new church of St. Gabriel, Upper Easton, is about to be consecrated. The edifice is situated near Messrs. Leonard & Bon's collieries, and is said to be the finest brick church that has been built in the neighbourhood. It consists of a nave, north and south transept, chancel, and side chapel forming vestry and organ chambers. The tower is placed on the south side of the chancel, and the ground-floor is set apart for the organ, when one has been procured. Stone has been used as little as possible, the intention of the architect, Mr. J. Stiles, being to avoid having been too heavily laden with stone, having been to be as much effect as possible by means of colour and arrangement of plan, rather than of expensive labour in the shape of mouldings, stonework, &c. The rood-end consists of three arches, resting on shafts of Mansfield stone, and the creed, commendments, and the Lord's prayer have been carved in gold ground in the pinnacles and spire and font are of stone. At the west end of the building is a gallery, approached by a separate entrance. It is intended for the use of the school, and will accommodate about 100. Altogether, including this gallery, the building will accommodate about 700 persons. The entire cost will amount to about 3,000*l.* of this sum upwards of 2,700*l.* have been obtained.

Thamesmouth.—The ancient church of this parish having undergone a restoration, has been

re-opened for divine worship. The walls have been restored, and the roof renewed. The east window has been filled with stained glass, the three lights being to the memory of the late incumbent, his wife, and his son respectively. The altar floor has been paved with Milton's tiles, and that of the other part of the building with uniform red tiles edged with black. The old high square pews have been superseded by open benches of deal, stained and varnished; and an altar, pulpit, and reading desk, of similar material, have been erected. The cost of the work is about 1,100*l.*

Broughton Pagny.—The church of this parish (a very ancient one, dating, it is supposed, so far back as the tenth century) has lately undergone considerable repairs and alterations. It has been repaved with stained deal, and the tower, two stained glass windows, manufactured by Messrs. Hinton, Butler, & Bayne, of Covent-garden, have been placed in the east end, one at the left hand, representing the "Fall," with the words, "As in Adam all die;" the other at the right hand, the Marys at the empty sepulchre, with the words, "In Christ all live." The church was formerly informed that the windows have been inserted by surviving members of the Goodenough family, in memory of their ancestors who have lived and died in the parish. The last addition to the church is a small organ, of four stops, built by Messrs. Henson, Brothers, of London. The cost of the organ was 50*l.*

FROM SCOTLAND.

Edinburgh.—It is in contemplation to have a rotary steam-engine in Edinburgh for street-cleaning and other purposes. The gearing and machinery are to be very light, moving upon one driving and two supporting wheels. The carriage being built up a long ridge, having a continuous incline from Holyrood to the castle, the draught for horses in the "false" wagons is frequently at present too heavy.—The Edinburgh engravers on wood recently met for the purpose of forming a society for the advancement of their art. The profession was largely represented, and it was unanimously agreed that such an association should be formed. A code of law was drawn up, and office-bearers for the coming year chosen. These were—Mr. J. M. Corner, president; Mr. R. Paterson, vice-president; Mr. F. Robertson, secretary; and Mr. G. Morrison, treasurer.

Glasgow.—It is proposed to erect a Masonic hall in Glasgow at a cost of about 15,000*l.*—At a recent meeting of the Glasgow Philosophical Society, Mr. Gairdner delivered an address "On Defects of House Construction in Glasgow as a Cause of Mortality." He reviewed the evils arising from overcrowding, which has been repeatedly adduced as one of the most prominent causes of the lamentable high death-rate in Glasgow.

"The first consequence," as he remarked, "was enormous liability to epidemic disease, and not only to epidemic disease but to consumptive disease and various diseases of the lungs; and, further, an enormous rate of mortality in young children in particular—partly of course from epidemic disease—but partly also from the great number of other diseases, scrofulous diseases, convulsions, hydrocephalus, and tubercular diseases of the abdomen, and various other kinds of diseases which were known to be very destructive to infantile life. That regarded as the primary and most obvious consequence. The second consequence was, that the crowded and unhealthy conditions, crowding, the sense of disease was injured inevitably, and ultimately it was lost utterly. The third consequence was, that almost immediately after the death of a child, the mother was generated, due to the want of all those natural stimulants which went with us all to make up the tide of domestic comfort and the fourth consequence was, that this state of overcrowding in badly-constructed houses was a great degree of moral degradation and of religious apathy."

The lecturer then prescribed the remedy, and pointed out the essentials in house-construction necessary for the preservation of health and morality. These included, chiefly, adequate space in sleeping apartments, the proper separation of the sexes, judicious ventilating arrangements, facilities for cleanliness, and such like.

Kirkcaldy.—At Mr. Douglas's works at Danksford Foundry, a steam-roller, specially designed for consolidating the road metal upon a number of great highways now in course of construction in the East Indies, has been made. We should like to hear often that we do of the construction of such rollers for our British roads as well. The machine comprises a 12-horse power engine.

Wick.—A terrible storm has raged at Wick. The wind threw up prodigious waves, which demolished a large portion of the new harbor works, and entirely destroyed the staging. The gale blew with terrific violence. The sea struck

in prodigious mountains against the new harbour; rose again several hundred feet above it, and then came across the bay, like a huge bank of clouds.

The harbour was then extremely filled. Blackford.—Some time ago a number of the influential inhabitants of this village set themselves to bring in a supply of water, and after considerable exertions they have at length been successful. A reservoir was made in a field on the farm of Kinnech, about a mile from the village, where there is a good stream, and a plentiful supply of spring water. Pipes were laid, and public wells erected along the sides of the streets. The inauguration of the supply has just taken place.

Glasgow.—Public attention has of late been called to the excessive mortality now prevailing in Glasgow; and although the exact cause is not quite known, it is held to be to a considerable extent consequent upon the operations of the Union Railway Company and the City Improvement Commissioners who are engaged in demolishing some of the more densely-populated districts, without providing at present adequate accommodation for the persons evicted. The necessity for a scheme to provide additional accommodation for the poorer classes by the erection of houses on the English model-dwelling plan, has engaged the attention of several influential gentlemen in Glasgow. In August last a meeting was held for this purpose, and Mr. James Corbett, of Leam, gave notice of a contribution of 2,000*l.* with the further offer, if the proposal should be favourably received, of a large additional sum. Bailie James Watson also agreed to hand over 1,000*l.*, Bailie Salmon 1,000*l.*, and Mr. John McGavin 1,000*l.* It was calculated that about 30,000*l.* would be necessary to give the scheme a fair trial, but up to this time no action has been taken. The architect, however, a short time since communicated with Mr. Hugh Barclay, architect, requesting that he would arrange for the erection of four self-contained cottages in the neighbourhood of the city. Suitable ground was obtained at Whiteinch, and the erection of the cottages is now far advanced. The cottages consist of a ground-floor, having a large kitchen, with a scullery, a bed-room or sitting-room, and a water-closet; and in the attic two good bed-rooms,—in all four rooms. The cottages cost each about 150*l.*, with a ground-rent of 1*l.* 10*s.*, and the yearly rent will be about 10*l.* There have been already between twenty and eighty applications for the cottages. Mr. Corbett intends to put up other thirty similar cottages, but the site for them has not yet been fixed upon.

Books Received.

Collection of Epitaphs from the Ancient Church of St. Dunstons, in the Strand, Middlesex.
By FREDERICK TEAGUE CANACK, London: J. Russell Smith.

We have delayed noting Mr. Canack's little book with the intention of supplementing it with some notes in our hands of the old church of St. Pancras. Pressure of other matter, however, has prevented this. Let us briefly say, then, that the author, seeing the destructive operations that were going on in the burial-ground of his native parish, has devoted many of his spare hours to recording the principal inscriptions to be found there, and in the church of St. John the Baptist, Kenialtown. It was a worthy work, and seems to have been performed with conscientious care. The contents of the book, we are glad to hear, has not yet exceeded the author's expectations, that he intends to proceed at once with the next volume, which will contain ancient and modern epitaphs from the six following cemeteries in St. Pancras:—Highgate, St. George's (Bloomsbury), St. George's Marty's, St. Andrew's, St. Giles's, St. Martin's, St. Alexius's Chapel, Foundling Chapel, and New St. Pancras Church.

Mr. Canack seeks to become the Old Mortality of Middlesex, and we shall rejoice if he find imitators in other counties. Many of the epitaphs in his St. Pancras volume have an historic value.

In speaking of the epitaph on the tomb of William Woollett, the engraver, he mentions that the following lines, now defaced, were written on the tomb in pencil,—

"Here Woollett rests, expecting to be saved;
He graved well, but is not well engraved;"

and thinks it not improbable that these led to the monument to Woollett erected by subscription in the cloisters of Westminster Abbey.

VARIORUM.

We have before us several works on Domestic Architecture, which will receive due attention before long. Meanwhile we mention the titles of two of them:—*English Country Houses: Forty-five Views and Plans of recently erected Mansions, Private Residences, Parsonage-houses, Farmhouses, Lodges, and Cottages; with a Practical Treatise on House-Building.* By William Wilkinson, Architect, Oxford (Jas. Parker & Co.); and *Picturesque Designs for Mansions, Villas, and Lodges, with plans, elevations, and external and internal decorations to each Style.* Illustrated by about Five Hundred original Engravings. By C. J. Richardson, Architect, author of "Old English Mansions," &c. (Atobley & Co.).—The first part has been issued of "Picturesque Architectural Studies," by William Young, architect, author of "Picturesque Examples of English Churches." It will be fair to wait the appearance of another part or two before expressing an opinion of the work.—Messrs. Chapman & Hall have issued a fine work, *The Arts of the Middle Ages and at the Period of the Renaissance.* by Paul Lacroix, an account of which we shall, of course, give our readers. The illustrations are profuse and include sixteen chromolithographs.—The eighth edition has been published of *"Every Man his Own Lawyer"* (Lockwood & Co.). This is a handy book of the principles of Law and Equity, comprising the rights and wrongs of individuals. The author has sought:—*"to point out to those who consult it how to seek and to avoid every injury and wrong; to state and to state their rights; how to buy or sell an estate, a house, a ship, a horse, or any other thing; how to enter a contract of all kinds, and with all persons; how to hire and his farms, houses, lands, and innumerable; how to enter into agreements; how to take and give warranties, guarantees, notices, &c.; and to perform, in a brief manner, all such every-day transactions. And although it is not always, nor in every transaction, that the illiterate or uneducated can be dispensed with, still it is believed that many a six-and-eightpence may be saved, many a wrong redressed, many a right realised, and many an individual saved from heavy expense, and, in some instances, from ruin thereby, by early consultation at home with the pages of this treatise."*

—*The Photographic Art-Journal*, illustrated with photographs printed in permanent pigments (S. Low, Son, & Marston), has a good intention, and may be made an interesting, perhaps valuable, serial; but why, in the name of common sense, not to say honesty, take the name that belongs to another? The *Art-Journal* has made a position, and so others seek to trade on its name. This is always going on: "Punch is a success, so we will start a similar paper, and call it *Punch-and-Judy*." The eminent publishers of the *Photographic Art-Journal* could scarcely have given this point a thought. The current *Fraser* contains Professor Tyndall's discourse on Dust and Disease, to which we have before made reference. Under the heading *Reciprocal Duties of State and Subject*, the editor, Mr. Fronds tells some weighty truths which demand consideration.—"Debreit's Issues of Commons and the Judicial Bench, 1870," just now published, contains 1000 armorial bearings. Most of the information has been furnished by members themselves, and the editor groans over the illegible manner in which much of it was supplied. He says,—"Indeed, in several instances where the proofs were altered, the corrections could not be deciphered by the editor. The illegible writing in which many persons indulge at the present day is an annoyance that ought to be protested against on every possible occasion. There are secretaries of public companies who sign their names so that it is quite impossible for any person acquainted with the signature to read it, and they do this persistently, and with the idea that it is unreadable. If we had the power of inflicting their directors, they should at once be discharged from their office as being obviously unfit for it. Every man who writes at all can write his name so that it may be read, if he please, and it is an insolent waste of other people's time and attention when he does otherwise."

Miscellaneous.

Wire-Rope Tramways.—It appears that the method of transport by wire-ropes which was tried on an experimental line near Leicester last year has made considerable progress since that time. Thirteen lines, varying from short distances to four miles in length, have been constructed, and upwards of 100 miles are in course of preparation or under contract.

Royal Literary Fund.—The annual general meeting of the members of this corporation was held on Wednesday, Earl Stanhope, the president, in the chair. The treasurer's report, read by Mr. W. H. Harrison, showed that the permanent fund, which at the commencement of last year consisted of 27,000*l.* Consols, has produced in dividends the sum of 810*l.* During the year a legacy of 3,000*l.*, bequeathed to the institution by Mr. Thomas Brown, has been received and invested. The permanent fund, therefore, amounts to 20,238*l.* 17*s.* 3*d.*, producing an annual dividend of 907*l.* 3*s.* 3*d.* The stock of the Newton property consists of 8,167*l.* 15*s.* 10*d.* in the 3 per Cent. Reduced, producing an annual dividend of 245*l.* 0*s.* 8*d.* The Newton estate, at Whitechapel, has produced in rents, during the year, the sum of 255*l.* The president, in moving a vote of thanks to the honorary registrars, treasurers, and auditors, said in regard to the augmentation of their funds, a great deal depended upon the result of their anniversary dinners, and upon a judicious choice of a chairman. The chairman had always been chosen without reference to party politics, but had sometimes been a member of the Church, the Law, and the State, the special object of the council being to take care that the responsible post should be filled by a nobleman or gentleman of undoubted merit and popularity. He thought they had been successful in selecting for the next anniversary one who realised the plan he had drawn up, in alluding to Lord Dufferin. Mr. Godwin took occasion to allude to the extraordinary largeness of the grants which had been made in the past year. In the year 1868 there were thirty-nine cases relieved, and the total amount was 1,350*l.*; in the year 1869 there were fifty-seven cases relieved, and the total amount was 1,500*l.* The largest sum they had ever distributed in the same space of time. A cordial vote of thanks was then passed to Mr. Octavian Blewitt, the secretary.

Women's Club and Institute.—On Wednesday evening the first annual meeting of the members and friends of this institution was held in the drawing-room of the club, Newman-street, Oxford-street, under the chairmanship of Mr. Hodgson Knott, who delivered a stirring and doctory address, pointing out that the society was likely to be the precursor of many others, not only in London, but in the large towns of the provinces. He hoped to see engrained on their faces to assist women during temporary sickness, or within aid to help them into businesses adapted to their taste and abilities. Such undertakings as this claim a strong claim to the sympathy and active support of the affluent, and he recommended that prizes should be established as an inducement for women to write papers illustrative of the mental and material capacities of their sex, and the best mode of developing them. The report, which was unanimously adopted on the motion of Mrs. M. Bore, states that the club was opened on the 15th Feb. 1869. During the subsequent twelve months 260 members joined, and the number is gradually on the increase. Of the total number, 137 are known to be engaged in maintaining themselves in various branches of business, some as artists, teachers, &c., but the occupation of the remainder is not stated. There are some ladies of private means, who visit the club occasionally to render valuable assistance by recommending to employments, or doing friendly services in some other way.

Stamps on Building Leases.—In the House of Commons, the Chancellor of the Exchequer, in bringing in the Bill on this subject, said that having considered what had been urged in relation to this matter, he thought it would not be just to insist on the limit of the indemnity he at first proposed. He therefore now only made a measure applicable to the future, and should insert a clause by which stamps on building leases would be 10*s.* instead of 3*s.* Leave was then given to bring in the Bill.

Government and Science.—Replying to Mr. Samuelson, in the House of Commons, Mr. W. E. Forster announced that Earl de Grey intended to advise her Majesty to issue a Commission to inquire into the aid given to schools of science, and to consider whether such aid could be given with better advantage. The question of the amalgamation of the Jernyn-street and Oxford-street schools with the new School of Science at South Kensington would come within the scope of the inquiry.

Thames Mud, and what London Butter is made of.—Dr. Muter, the analytical chemist, has been analysing pure London butter, and he finds that some of it, at least, is not made of that "nasty scum" which occasionally flats on London milk after it has stood for two or three hours; and this is, no doubt, so far, satisfactory to Londoners, if not to others. Much of it, on the contrary, now appears to be made of a pure, rich, and buttery cream, as it is extracted from Thames mud! A sample of this useful article has been examined. It was derived from the mud at Battersea, and is of a yellowish tint, "very like" butter in appearance, taste, and smell; and what more can a Londoner require, if it be nutritious, as it is, of course, the nature of it and the method of obtaining it are chemists' secrets. Mud in itself, as consisting of particles of inorganic matter, such as flint, granite, sand, clay, or wood, reduced by attrition, and mixed with water, can yield nothing of a nutritious character, as the *South London Press*, in announcing the discovery, remarks; but please to observe that there are exceptions to every rule; and the clay upon which certain savages feed must be an exception here; as also the wood out of which, some years ago, it was proposed to make bread for starving famines. The mud is extracted, and soda, or oil of flints, are grasy, and when in solution have a gelatinous appearance; but this is not quite what we get from the rich and valuable mud of the Thames. Peat is a more likely source, as it yields paraffin, also stearine, and analogous bodies; but it is still more likely that the mud of the Thames is impregnated with fat fatty matter, the refuse of manufactures, of ships, and derived from dead dogs, human bodies, and various other sources. One thing is certain, it seems,—the manufacture of this grease from Thames mud has been going on for a long time, and that it is shipped weekly to Holland, where much of our "fine dairy butter" is "manufactured" in more secret than the agricultural one.

Concrete Buildings, Wales.—A correspondent says:—"It is worth while to visit the farmstead of Dolmallynny, in the parish of Tregynon, to inspect the farm buildings erected thereon by the Hon. H. Haabury Tracy. When you enter the farmyard, you come to a range of cow buildings built of 15 in. of concrete, the roof of which is made of concrete slabs, 3 in. thick, the rafters T form, 12 ft. long, without any tie beam. The ground on which the building is erected being very uneven, the interior is all arched, so that the cow-houses and calves' stalls stand on arches underneath, and are intended for young cattle. The Bing cows, Bery, and stalls are all concrete; in fact, the cows are tied to a concrete wall, the floors being all of the same material. The next building which will meet your attention is a stable for five horses, arched off, and covered with concrete. This building is on arches; the space underneath is intended for roots, &c. The manger is made of concrete, with, under the new system of feeding horses with damped provender is much preferable to wood. In the same range as the stable are the barn, the cart-houses with granary over, which are all of concrete, even to the barn floor and the division of the 'bay.' The cart-houses are arched, and the granary floor is of concrete, so that it is impossible for rats and mice, which are the pests of such places, to enter."

Lectures, Working Men's College.—The programme for the current term shows that the following lectures, free to all members of the College and Adolt School, will be delivered:—Saturday, March 12, "Sir John Falstaff," by the Rev. L. D. Bernal, LL.D.; March 19 and 26, April 2 and 9, "Crests," by Mr. N. S. Mackintosh, M.A.; April 23 (not settled); April 30, the "Science of Language," by Mr. Richard Morris; May 7, the "Theory of Proportion the Basis of all Formative Science"; and May 14, the "Science of Education as Founded on the Theory of Proportion." The Education of the Workman," by Mr. W. Cavan Thomas.

St. Silas's New Schools, Islington.—A public meeting has been held to celebrate the completion of the new schools belonging to St. Silas's district. The schools are situated in a neighbourhood where they are much required. They are calculated to hold 650 children. The basement floor is intended for the infants' school, the floor above for the boys, and the top story for the girls. The schools are fitted up with class-rooms, lavatories, and other conveniences.

Roman Wall, near Kustedje.—At the last meeting of the Newcastle Society of Antiquaries a letter was read from Mr. Henry Cullen, a physician at Kustedje, giving a detailed description of Trajan's Wall, which, he said, began at the edge of the cliff, about a mile distant from the town of Kustedje to the west, and ran across the country to Rasara. Like the Roman wall, it went up hill and down dale. It had now nearly disappeared, having been grubbed up by the Tartars for building purposes; but at the time when he first went to the place it was very extensive. It was about 6 ft. wide, and built of blocks of stone from 4 ft. to 5 ft. in length, and from 1½ ft. to 2 ft. wide. To the north of the wall, at about 100 ft. distant, running parallel with the wall at an equal distance, was a rampart of earth still in good preservation, the slopes being defined, but no stone work being visible. At a short distance from the cliff there were the outlying walls visible of what must have been a large fortified building, about 100 ft. in diameter, and about a mile distant from that, on the western side of the wall, was another such building. The writer's opinion was that the wall was not built by Trajan at all, but by Constantine. These ruins would seem to imply that the foe the fortifications had to defend the inhabitants from was to come from the Danube and the districts about its mouth, and that led him to the belief that the wall had been erected by Constantine to defend Kustedje, the ancient Tomi,—against the Scythians and other barbarians.

Wurtemberg Schools of Industrial Art. After the Great Exhibition of 1851, drawing classes were added to all primary schools in Wurtemberg in order to furnish manufacturers to compete with those of France. At first these schools were gratuitous, but it was soon found that attendance would be more regular if the parents of the children were required to contribute to the expenses in proportion to their means. The fees imposed vary from one shilling to one pound per annum. The teachers are, as far as possible, selected from amongst those workmen and employers belonging to the principal trades in each town who have themselves previously attended similar classes; the workmen are transferred into teachers from their ordinary occupations, but are paid at the rate of 3s. 6d. per hour for the lessons which they give. At Gieselsinger there is a class with 180 pupils, under the direction of a mason or bricklayer. In many towns employers have so highly appreciated the instruction given in these classes that they themselves send their young workmen and apprentices to attend them. It has been found that artists of acknowledged talent have not succeeded so well as artisans in the conduct of these classes. Great attention has been paid to the provision of copies and models for the use of the schools, and to lithographs, plaster casts, and wooden models. Collections of these were shown at the Universal Exhibitions, in London in 1862, and in Paris in 1867.

House Vents for Human Habitation.—A number of summonses as to a pestiferous neighbourhood have been heard at the Woolton Petty Sessions. The summonses were issued at the instance of the Waverley Local Board against owners of property in Rose-lane, Waverley, for permitting a nuisance to exist on their premises, the said nuisance being described in the summonses as "an offensive cesspool, accumulation of water and sewage, soil saturated with sewage, and offensive sewage overflowing into the adjoining premises, arising from defective drainage and want of paving." Evidence for and against was heard, and the magistrates having considered together for a short time, Mr. Gibson said they had come to the unanimous conclusion that the houses were nuisances. Their decision, therefore, was that these houses be closed until the nuisance was abated.

The Visitation and Relief of the Poor. Mr. Henry Pownall, the chairman of the Middlesex magistrates, has issued a pamphlet advocating some important reforms in connection with the visitation and relief of the poor. He recommends a much greater distinction to be made, in the case of the poor, between the able-bodied, and that greater facilities should be permitted for the relatives and friends of the former to visit and bring them presents. He also recommends, with us, that the poor-rates should be raised by national taxation in equal proportions, and that the laws of settlement should be altered.

The Liverpool Gas Company's New Offices.—The erection of the new office buildings required by the Liverpool Gas Company, in consequence of their present premises in Newton, having been purchased for the central railway station, has just been commenced by the contractors, Messrs. Jones & Son, of Liverpool. Some time ago the Gas Company purchased from the corporation the building in Cornwall-street, formerly occupied as the Public Offices, together with adjoining land, the entire area being upwards of an acre; and it is on a portion of this land that the company's new buildings are about to be erected. The designs for the new edifices, which will occupy about 1,160 square yards, have been furnished by Messrs. Potts & Liddle, architects; and the works will be carried out under their superintendence. The main elevation of the building, which is in Italian style, will front Duke-street. The interior will be very large and commodious, and will contain every requisite for carrying on the business of the company. Next year the railway company take possession of the Newton premises.

Dock Extension.—A fine dock, in extension of the East and West India Company's system, was opened at Poplar last Saturday. The river from Blackwall to Limehouse describes a horse-shoe curve, and the South Dock (by which name the new property is to be known) runs in a straight line from Poplar point to the East Dock, 33 acres of water in the new dock, and four pairs of gates, through which entrance can be obtained from either end. The main lock is 300 ft. long, 55 ft. wide, and 30 ft. depth at high tide, and it leads in the first place to a basin of six acres in extent. On the north, or Poplar side, of the dock is a mile and a quarter long quay fronted with sixteen jetties. The total length of quay is three miles. Warehouses are built, or building; two of them for the storing of fruit, and others for tea, coffee, rice, &c. A railway, bringing the dock into connexion with all parts of the country, will be laid down along the quay. After luncheon, the chairman of the East and West India Dock Company, Mr. Kemshed, incidentally stated that the company had been in existence seventy years, during which time three docks, representing something like 80 acres of water, had been opened. Mr. Kemshed then complimented Mr. Wythe, the contractor, upon the good quality of the work.

Accidents.—The wall on the side of Malvern-street, Enderbury, shattering on Mr. Nightingale's garden, is of considerable depth, and the pressure upon it from the great traffic along this thoroughfare has proved too much for its strength. A portion of the wall, perhaps to the extent of some ten or twelve yards in length, and to a considerable depth, as well as part of the pathway, have given way and fallen into Mr. Nightingale's garden. The wall, we believe, was built by the South Yorkshire Railway and River Den Company.—The ruins of the old Manor at Sheffield are now rapidly crumbling away. During the past few weeks considerable portions of the wall have fallen, and other and still larger portions are expected at any moment to follow them. The old structure is of historical interest.—The Italian papers contain particulars of a melancholy accident which has just taken place at Biemme. A meeting was being held of a working men's benefit society, at which about 300 members were present. On a sudden the floor of the room gave way, and nearly all the persons present fell with it to the floor beneath. More than eighty were injured, twenty of them severely, and two were killed.

A Failing Court.—Business in the Supreme Court at Hong Kong was brought to a rather sudden termination on January 11. According to the *Times* of India, after the judge had taken his seat, a report was handed to him from the chief engineer, saying that the building was unsafe. The judge, we are told, at once adjourned the court sine die, remarking that he did not wish to listen to any long arguments on the report, but would take it as proved. O! wise young judge!

Value of Property in Leeds.—The freehold house and garden owned by the late Mr. Cross, bookseller, Commercial-street, was offered lately for sale. The premises have a frontage of 43½ ft. to Commercial-street, and cover an area of 1½ square yards. They were knocked down to Mr. Wedderburn, of Moor Allerton, for the sum of £2,020, lessing at the rate of about 25s. 12s. per square yard. In 1865—exactly ten years ago—this property was bought for £1,080.

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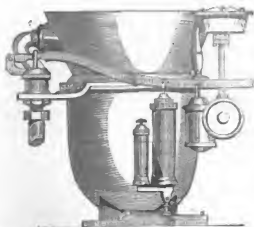
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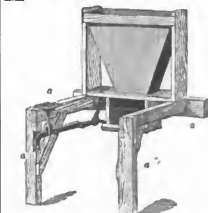
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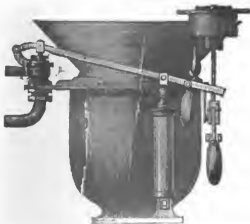
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The Builder.

VOL. XXVIII.—No. 1415.

Alexandria: Art and Despotism.

OR the culture and development of the fine arts, which form of government, the despotic or constitutional, is the

most favourable? This is a question which has been frequently discussed, and many plausible arguments have been advanced on both sides. On the one hand, it has been affirmed that enlightenment and education, and consequently taste, advance

side by side with political freedom; that while men's minds are not convulsed by upward struggles towards the sun of liberty, and are unclouded by those apprehensions which constantly overshadow the enslaved, they are most open to receive impressions of truth and beauty in both nature and art; and that the enlarged appreciation of, and constantly increasing taste for, the beautiful, which is likely to take root and spread abroad amongst a people who are thus free from political cares, would induce their legislators to take the fine arts under their charge, make them a branch of national education, and foster them by every means in their power. As this state of things could only come about under a constitutional Government, that is evidently the most favourable for the culture and progress of the fine arts. It may be advanced also, in support of this view of the case, that art flourishes best in an atmosphere of truth; that undue favoritism, intrigue, plotting, and jobbery of all sorts are destructive to its growth; and it may be asked, where will you find greater freedom from jobbery than under a popular and liberal administration?

On the other hand, it may be asserted that refined taste does not necessarily accompany political ability and influence, and that under a liberal Government any man who is great upon the platform may be successful at the poll; and that, with a special talent of some kind and a great deal of boldness, he may even attain unto office, and to such an office that he may have the handling of his country's ornaments, her crown jewels,—architecture, painting, and sculpture; and that this man may be utterly destitute of taste, and incapable of sympathising with artists or of comprehending art of any description. Then it may be asked, would not such a man inflict irreparable injury upon art? Yet such a state of things is possible, and does occur in the most liberal countries and in the most enlightened period of the world's history. How, then, it has been demanded, can that form of government which admits of such a case be most favourable to the growth of the fine arts?

We must here beg our readers to remember that we are merely repeating what has been, or may have been, advanced on both sides of the question.

However much we may be of opinion that art and education ought to be developed together, we cannot but own that hitherto in the history of the world practical results show that the larger number of great works of art have been accomplished under despotic rulers, without the consent or concurrence of an enlightened people. In order to comprehend this apparent paradox,

let us look at Egypt, covered with stupendous temples, surrounded by a series of sphinxes, and guarded by gigantic genii, all perfected under the most crushing of despotisms. The palaces of Persepolis and Nineveh were constructed under a similar condition of affairs. Let us go to Greece, and see the Parthenon, erected by Pericles after he had made himself master of the Athenians. Rome owes its Coliseum, its enormous baths, its triumphal arches, to the Cæsars, not to tribunes and deomvirs. Venice owes all its finest structures to the dogs of the time of its oligarchy, not to the time of its democracy; and lastly, the two finest cities of ancient and modern times owe their grandeur to the magnificence of imperial taste.

Paris as it now stands, re-edified and rectified by Napoleon III. and his faithful Haussmann, is a splendid monument of imperial greatness—a vast Napoleon-ville, which will remind posterity of that remarkable man, who, having crowned the edifice, in contest with simple dignity to reign the trowel into the hands of those whom he condescends to call his employees.

Alexandria, the city of the conqueror of the world, accomplished by his architect Diocorates, was the glory of the Levant, and the greatest empire of the East,—a worthy memorial of Alexander the Great and of that architect who built the Temple of Diana at Ephesus, and who proposed to cut Mount Athos into a figure of his master, representing him with a city in one hand and a cup in the other.

Nevertheless, no one desires despotism in England. The tendency of our observations is simply to show the necessity for proper arrangements, under a liberal form of government, to insure attention to matters of art.

When Governments are compelled to condescend by the pressure of public opinion, but are not in the same manner impelled to any largeness of mind, or even to common rectitude, in dealing with matters of art, evil results must follow; and the reason of this is that art and artists are so little considered by the community, that in the case of a public competition the selection of an inferior work by the judges is not believed by them to be an act of injustice to art and to competing artists, but rather a mark of cleverness on the part of those who have exerted themselves to bring about such a result for the benefit of a friend or dependent. No wonder, then, that Meocenas enters the lists for the advantage of his *protégé*, and that it is thought a matter of little moment if the strawberry-leaves be tossed a little awry, the lawn slightly soiled, or the ermine a little ruffled in the tangle of unblushing jobbery that ensues. It is to be owned that this state of things is partly owing to the conduct of artists themselves, who often allow themselves to be made handies to a job. They write and talk about Beauty, Truth, and Sacrifice; but the handmaids who surround the triumphal car of Art, and attend her on her progress, yet they would not hesitate to immolate Truth and Beauty and Art herself at the shrine of a patron who helped them to a job.

In England, as in France, there should be a department specially devoted to the advancement of the fine arts, and formed of men duly qualified by their attainments, their taste, and their experience to direct it. The despot and his adviser have hitherto been the best friends to art. Pericles and Phidias, Alexander and Diocorates, Justinian and Anthemius, Napoleon and Haussmann,—all accomplished monuments of which the world was and is still proud. The occasion makes the man. It is not likely that architects will again have commissions to build cities with *corte blanche* as to cost, or orders for temples, very splendid, with no limit as to the number they would hold, or as to thickness of walls and number of columns; but if they had but the just satisfaction of knowing that if they produced the best de-

signs they would be employed by the government of their country, those best designs would be produced, and they would in their manner equal, if not excel, the works of Diocorates, Anthemius, and other architects of the past; for talent belongs to no particular age or country, and is more rare now than in the earlier ages of the world, when opportunities of learning were few.

When the conqueror of the world set foot in Egypt, 331 B.C., after his conquest of the Phœnicians, a city sprang into existence at his word. The site he chose was a fine one: it was on a slip of land situated between the Lake Mareotis and the Mediterranean. There was an island in front of it, which afforded shelter for vessels, and formed a port; and on the other side there was a port on the lake, to which the products of Egypt and Nubia were conveyed by the Nile, which communicated with the lake.

Pliny gives a short account of the manner in which Diocorates, or, as he calls him, Dinocorates, proceeded with his work. "Building the city upon a wide space of ground, 15 miles in circumference, he formed it in the circular shape of a oblatum, uneven at the edge, giving it an angular projection on the right and left; while at the same time he devoted one-fifth part of the site to the royal palace." As the city was to be the great place of exchange for the products of Asia, Africa, and Europe, the chief thing to be done was to form a communication between the outer and inner ports; so he constructed a wide road between them; and then at right angles to it, intersecting it at about the middle of its course, he laid out the principal street of the town, 100 ft. wide. This street ran almost parallel with the seashore, and was called the Bruchion. This grand way was lined with palaces and other public buildings. A similar street is to be found in all cities built about this period. At Damascus, in the street called Straight; at Solt, and in the deserted towns of the Hæran. This rectangular arrangement was first adopted by Hippodamus, who built Rhodes, and was celebrated as an architect of cities. Around the Bruchion were grouped those magnificent edifices which gave renown to Alexandria. Such were the Serapeion, which was built on an eminence, and approached by 100 steps; and the museum, which contained the Alexandrian library.

After Alexander's death, Egypt fell to the lot of his lieutenant, Ptolemy Soter, who enlarged and improved the imperial city by connecting the island with the mainland by means of a jetty called the Hepæstodon, and building on it the celebrated lighthouse which was considered one of the seven wonders of the world. He was the founder of the family of Lagides, who reigned in Egypt till the time of the Cæsars. He and his successors took a pride in decorating the capital. The palace of the Ptolemies, the tomb of Alexander, the theatre, Poseidion, Timoneum, Gymnasium, Panæum, and Hippodrome, were all erected by them in and around the Bruchion. Thus Alexandria became the finest and most prosperous city in the Levant, at about the time of the commencement of the Christian era. Three centuries after it began to decline; for, as it became the theatre of many of those violent political and religious convulsions which preceded the fall of Paganism, one of which has been so powerfully described by the author of "Hypatia," it suffered fearfully in each outbreak, and was devastated by the revolted, and by the repressors of revolt, till its final destruction was consummated by Amrûn, the Lieutenant of Calif Omar, who took possession of it A.D. 641, and burnt the Alexandrian library, the loss of which was greater than would be that of all the libraries at present existing in England and France. What was the extent and magnificence of Alexandria at that time may be gathered from the report of Amrûn to his chief, in which he

of room is too small, and the questionable system of "flats" is worked on the narrowest health-supporting gauge. The tenant is here provided with bed-spaces, boxes, up to brasses, and plaster, or half-brick thick partitions, and the space occupied by these bed-spaces, when deducted of the room, makes many of them about 8 ft. or 9 ft. square, hardly more. No neat iron bedstead or clean and polished birch or mahogany one is wanted in your "working-men's" flats. Two parallel pieces of scotch pine form the wall to wall, and a 9 in. or 11 in. piece forms the external sideboard. The Scotch tenant is these working-men's "flats" may "bolt the moon" bedtime, and run away with the bedding, but we are bound that he will not levain with fistulas. The bed is intended to serve a generation or two. On each "flat," in some of these houses there are six rooms. Two are intended for each family, and a water-closet is on each landing. The rent is 10s., including the tenant's share of the taxes and rates. How families can be reared up in decency in these narrow structures we do not know.

But even there are not the lowest description of your working-men's tenements. There are some flats where only one room is appointed for the sleeping, eating, washing, cooking, and living purposes of a family, and the water-closets of these latter domiciles are not on each landing, but one is not to subserve the entire purposes of several families. What must be the state of these dwellings, and what can be the morality and decency alive within them? And, mark ye, these are not the old town structures, but the new ones for the working classes of Glasgow in the era of erection now. And they will be inhabited through the accommodation is small; for the rents, though not low, still are lower than elsewhere. These improved (?) dwellings will have a record of doom behind them yet that the nearest churchyard and the jail will show, and the streets of Glasgow in living contamination exhibit.

Why should we point them out by number and name? They are built to sell and to kill, and your sanitary inspectors of nuisances, people of Glasgow, consider them fit and proper dwellings for your working classes!

Turn we through the fever-stricken Cowcaddens, and are there not more of them? The dead are here burying the already dead; but the turn of the former will be to-morrow. The black plumes will nod, and the murdered innocent will be carried out on the same bier with the parent, and the choked sob and the suffocated sorrow will be drowned in the molasses glass, for all will be gone of that desolate house that was worth living for. The epitome of a life condemned to breathe in a poisoned atmosphere, and to vegetate amidst dirt and disease, is easily written.

We walk along the streets again, and we find ourselves in Rotten-row, not in Hyde Park, but off the High-street, Glasgow. No grand equipage, nor courtly dandies, nor green sward, nor leafy trees, nor crystal pool; no, we wade through dirt and disease-germs once more. Public institutions are around us, industrial schools are in our midst, asylums for the aged are a few paces on, and a hospital for the social evil is by our side. We penetrate lanes, and filth is everywhere. We ascend staircases, and dirt and the smell of the graveyard choke us. The streets are in ruins, and the footways are broken as if by earthquakes had shaken them, and the water-courses and side channels are not made with care. Is there a curse here, or is the contrast allowed to exist for sake of effect?

Pass we away, and after several windings we are in the great Argyle-street, the popular, the fashionable, the wide, and wealthy shop-keeping thoroughfare, ending in a green line through the heart of the city. A few yards more bring us into the Ingleton, and under the shadows of the old church we disappear from the wide pathway through the narrow artery. Wealth is without on the paved broadway, but want and wretchedness are in here. This is the Back-street, and it leads from the notable Brigsteed to the fashionable Ingleton. Where are your sanitary inspectors, Glasgow? Aches and filth, stench and intolerable nuisances, are under our feet. The old walls are dropping asunder with damp. The aged and crumbling tenements are chock full. No rooms are empty, and no maidens are here. You breathe in an atmosphere of stench. Cattle-skins are here in heaps, fresh from the butcher or knacker, as may be, and they are undergoing their preliminary process of soaking and hacking, drying, scraping, and dressing, or other more technical courses. 'Twixt human and beastly

smells, disease and dirt, dampness and poverty, the Back Wynd has its share. In here, then, is work for the hose. But not alone is it required on the pavement, but in the hall-ways and on the staircases of each house. The majority of the houses in this wretched court are unfit for human habitation, and apparently there is no attempt made to keep this place clean. Here, in this quarter, there are inferior and many entries called dirty. Off the Back-street, Brigsteed, Stockwell-street, and scattered over the narrow space contained between the former and the latter street, there are dozens of foul places not unknown to authority, but neglected by it. Along the line of the Gallowgate there are networks of courts and lanes, filthy and foul, dark, and unfit for human creatures; and yet, in these dismal rookeries, and in the thick pestilential atmosphere of these dreary quarters, many of the labouring and working classes are located. The Union Railway, which is now in course of construction, has swept many of these fever dens away, but with what good effect we need not inquire. Had there been a sufficiency of good dwellings for the dispossessed to betake themselves to, no harm would have been done; but, in the absence of such, quarters already over-crowded have been resorted to for the necessary shelter.

The subject is so large, so sorrowful, and so important, that we must take another Number to pursue it in.

ART-WORKMANSHIP COMPETITION, SOCIETY OF ARTS.

THE following is the report of the judges, appended to which is the list of prizes awarded:—

"In submitting our list of awards for the competition amongst the art-workmen for the season 1869-70, we desire to congratulate the Council of the Society of Arts upon a more worthy response to their liberal invitations to the workmen, to forward good specimens of their handicrafts, than was made last year.

This improvement is manifested rather in the absence of the very bad than in the presence of the very good. In the second division, however, considering the application to ordinary industry of prescribed art-processes, we have met with several works of conspicuous excellence. Foremost in the list of these, we must place the ornamental ironwork for the balcony of a window, executed by Messrs. William & Henry Bobson, a work uniting three special merits—elegant and not overladen design; masterly technical execution in forging, twisting, &c.; and moderate price. We are fully aware of the high position occupied in metal working generally by this country at the present time, but we look upon this work of the Messrs. Bobson as an example, for instance. We have, therefore, awarded to it the North London Exhibition prize for the best specimen of skilful workmanship at the Society's exhibition, in addition to a premium of 10*l*.

In several other instances the Exhibition contains good evidence of excellence in metal working, and the Messrs. Emma's balcony and wrought-iron banister are very satisfactory.

In metal working in other divisions we have to commend highly the 'Virgin and Child,' worked in low relief in iron, after an example in the South Kensington Museum, by Mr. A. Danfö, in this case we have a more excellent work combined with moderate price. To Mr. A. Danfö we have awarded a premium of 10*l*., while, for a corresponding work, executed by Mr. Adolf Osterager, we recommend that a prize of 5*l*. should be given.

The hammered iron knocker, executed by 'A. S.' is large in style, and well and simply treated.

In coppermith's work, the *reposed mask* wrought by Mr. G. Doerr is well 'bowed' out, and may be regarded as a skilful piece of workmanship. Mr. A. Sailer's has for its good specimen of the inlay of German-silver in copper, and a still better circular ornament pierced in metal; the latter is agreeable, and characteristic in design, and is worked with a cleanliness of cutting and truth of figure highly to be commended.

It is to be regretted that, in working in the precious metals, in which at the present time the art-workmen of Paris and Vienna are so superior, the Society's Exhibition should contain nothing worthy of notice.

In the second division, however, we are glad to recognize, on the part of Mr. Alfred Gray, a

power to execute enamelling on metal in the style (a novelty in this country) which has gained so much reputation for the houses of Christofle and Barbodienne, of Paris. We have awarded Mr. Gray, for his miniature frame, a premium of 7*l*. 10*s*., and shall hope to see him, on some future occasion, displaying his command over the various processes of enamelling upon a more elaborate and important scale. The application of enamels in various colours on ceramic bodies, as so far from elegant commemorative tablets, has been firmly shown by Messrs. Evans & Goddard, of the Potteries, to whom we have awarded a premium of 5*l*.

We are further pleased to be able to remark that the Society's invitation to workmen to compete under their second division, has succeeded in eliciting marked novelty and excellence in English glass-working. Mr. Joseph Leicester's three champagne glasses, with filigree in the cup, stem, and foot, fully rival the products of Venice. The works of Mr. Barnes, though not so elegant, display command over several difficult processes in glass-blowing. In the same division, Mr. Charles Pfander contributes various agreeable specimens of painted book-covers of a more or less novel character; and Mr. E. T. Grove an envelope-case, in various woods, enriched with carvings of low relief, and marquetry, of neat execution, and marking generally the application to ordinary industry of an art-process hitherto comparatively little used in this country.

In the classes of carving in wood, carving in ivory, painting on porcelain, and modelling in plaster, there is little call for remark, although a fair average has certainly been maintained.

In enamel cutting, we remarked an excellent portrait of Dr. Billings, for which we have given a premium of 5*l*.

Among the works of exceptional merit, not previously referred to, should certainly be noticed the work of H. J. Hinton, for a small metal cover, pierced, and chased with great truth and taste.

In etching and engraving on metal, the works of Mr. S. Gill and Mr. J. Gittins were of such equal merit in our eyes, as to entitle each of them to a premium of 5*l*.

The embroidery executed by the Misses Pfander reflects credit upon those ladies.

We noted the contributions to the exhibition of the veterans, Mr. Louis Genth and Mr. Mark Rogers, whose works we have commended.

A decided novelty in marquetry, contributed by Mr. W. Clayton, to which we have awarded the premium of 7*l*. 10*s*., appeared to us likely to be valuable for purposes of internal mural decoration.

Upon the whole, and in conclusion, we have to express our conviction that the Society of Arts, which it so fit to continue its liberal invitations to artists to compete for prizes, cannot do better than offer a somewhat similar programme for the ensuing year to that of 1869-70, varying, however, some of the prescribed dishes, the repetition of which has now become monotonous.

RICHARD BURNARD,
GEOFFREY WATTS,
M. DICKY WATTS."

FIRST DIVISION.

Works executed after Prescribed Designs.

No. 2. Panel carved in oak, after a work in the South Kensington Museum; by Mark Rogers, jun. 11*l*., Tuckers-street, Finsbury, S.W. Price 1*l*. 1*s*. 6*d*. of 7*l*. 10*s*.

No. 3. Panel carved in oak, after the same design as the above, by the same artist, and after the same design, H.C. Price 1*l*. 1*s*. 6*d*.

No. 4. Carving in wood, after an example of a chimney-piece in the South Kensington Museum; by C. H. Lister, 41, Prince of Wales-street, N.W. Price 1*l*. 1*s*. 6*d*. (when finished with enriched moulding) 1*l*. 1*s*. 6*d*.

REPORTED WORK IN METAL.

No. 7. 'The Virgin and Child,' iron panel, in low relief, after an example in the South Kensington Museum; by A. Danfö, 101, Cranborne-street, 1,icester-square, W.C. Price 1*l*. 1*s*. 6*d*.

No. 8. 'The Virgin and Child,' iron panel, after the same example as above; by Adolf Osterager, 24, High-street, Bloomsbury, W.C. Price 1*l*. 1*s*. 6*d*. Price of H.C. 1*l*. 1*s*. 6*d*.

No. 10. Reported work in silver, after a design in the South Kensington Museum; by A. Clark, 20, Gloucester-street, Euston, N. Price 8*l*. 10*s*.

HAMMERED WORK IN METAL.

No. 11. Hammered iron knocker, after an example in the South Kensington Museum; by A. S. Price 6*l*. 1*s*. 6*d*.

CARVING IN IVORY.

No. 14. Plaque executed in ivory, after an example of the same in the South Kensington Museum; by H. Godard, 1, Margaret-place, Terrace, Junction-road, N. Price (when finished) 5*l*. Price of H.C. 3*l*. 10*s*.

No. 15. Work executed after a design given by the South Kensington Museum; by H. J. Hinton, 3, Great Portico-street, W. Price 1*l*. 1*s*. 6*d*.

PLANTS AS SANITARY AGENTS.

As interesting address on this subject was recently delivered at the Museum in Leicester by Mr. Ingram. After considering some of the causes which contribute their quota of dirt to the world, the reader thus adverted to those sanitary agents which are found in the vegetable kingdom, to which nature appears to have assigned the task of assimilating and reconverting the matters resulting from the waste of the animal creation.

The beneficial action of trees and shrubs in a town consists not only in the work the roots perform of removing decaying matter from the ground, but they effect a further good. Plants absorb carbonic acid, and give out oxygen; and as in towns the air is vitiated by carbonic acid and other products of combustion, the multiplication of trees, shrubs, and plants, large and small, increases the volume of oxygen, which is the vital principle of the air, and so adds to the salubrity of every street or square in which they grow.

Trees are not alike in taste or constitution. Adapted by nature to suit the varying conditions and stances found in the world, some thrive best in rich, others in a poor silicious soil; some delight in a calcareous soil; others abhor it; hence all trees are not equally suited for planting in towns. Accustomed to the pure and freshening breezes of the mountain-side, some of the pines and firs are not to grow in atmospheric conditions together pure. The cedar of Lebanon is a tree of wonderful adaptability, and should be introduced in the new plantations on the race-ground. The Wellingtonia appears to thrive everywhere, as does deodar and Lawson's cypress. Deciduous trees, with large woody or hairy leaves, are not suited for towns; the partridge tree, which floats in the air resting on the leaves, often destroys them. The smooth-leaved lime, the Oriental plane, the ginkgo, elm, alantus, chestnut, and acacia are amongst the trees best suited for planting in towns. The evergreen oak is a noble tree, and it might be planted experimentally. The acacia, holly, lilac, laurestinus, all do well in town gardens, and recent experience shows that many plants do exceptionally well even in the smoke of great cities like London: the chrysanthemum is an example.

There are many climbing plants that, while they embellish a house, purify it, sending roots into its walls, where impurities are often found, and thus assisting to check the emanations and exhalations; amongst which may be enumerated ivy, Virginian creeper, clematis. Fruit trees planted against the wall of a house do more than embellish it, although the vine is sufficiently handsome to grow even without hopes of fruit; it is one of the most valuable sanitary plants that can be employed, and its roots go far in search of the pollution there, and nothing is too gross for a hungry and healthy vine. What more striking illustration is wanted of the cunning alchemy of a fruit tree; who would dream, looking at this dry stem and those dry roots, that so wonderful a production as a luscious pear or a juicy bunch of grapes could be the vital result of their action.

We speak of the impurities of a town, and although the causes actually arise within it, the effects extend beyond its limits, and particularly when a river passes near, which has been made a common sewer. Towns are as often injured in sanitary respects by the accumulation of matters which have been deposited in the air around them as by internal pollution. The palliative immediately suggested by the proximity of low lands surcharged with sewage is heavy cropping. I would interest the fields with trees, such as willows, poplars, and alders, abolish permanent meadows, and grow mangel warts, turnips, beet, Italian ryegrass, and other such quick-growing vegetables, and keep the land constantly cropped. The poor sandy wastes of Barking Creek, in spite of the current predictions of Liebig, have, when irrigated by London sewage, grown wonderful crops of rye grass.

A remarkable instance of the power of plants to draw malarious exhalations was powerfully pointed to me. Washington Observatory, U.S., is situated in a deadly marsh: the observer's assistants were killed off wholesale. Sunflowers were sown all round, and the period of greatest luxuriance was about the time when fever was most rife; the happy result was that fever disappeared, the plants could not grow on the poison that had killed the unfortunate astronomers.

Trees draw up from the depths of the earth

moisture that, charged with animal or other impurities, would otherwise appear in miasmatic exhalations; the moisture oxygenised by vegetable action is liberated into the air free from taint, and fit for human use. Trees present in their myriad leaves an immense evaporating surface, and the influence they exert on climate is greater than is commonly supposed.

However animate and instinct with life the outward or aerial development of a living tree may appear, its terrestrial action is not less inorganic. Although we cannot see, we may imagine the eager progress of the roots in search of food, penetrating the dark recesses of the soil, or rising to the surface where the ground is warm and rich, or stretching wide, led by some wonderful instinctive power towards soil more congenial than it found near the tree. The root action of a tree is not only wonderful in the mechanical force it exhibits in feeding the hungry living thing it sustains, but in the power of selection and repulsion possessed by those functions.

It has occurred to me that trees or their roots might be employed as filtering machines about the houses, to the suspicion of being tainted by the percolation of foul matter into the water within them; a network of roots round the well would probably keep everything of a nature calculated to render the water impure from passing in. Southey, in describing the Well of St. Keyne and the effluvia of its waters, gives us a good practical fact with his beautiful poetry.

Let us add to the vegetable life, stimulated by the application to it in the soil of the various waste and refuse substances, the wreck of humanity, the decay of animal matter, the results of the attrition of civilized life with the forces of the world. The solution of the question as to the disposal of the refuse and excrement of our cities is a great hungry ground that might profitably be enriched by the waste of cities; we have plants, the produce of which might be increased by being fed on the same substances; but that obstacle to ponderable bodies, space, intervenes; the collection, transport, and distribution of menurial matters from our great cities is a hungry land is surrounded with difficulties; but as these are great, so must our exertions be to overcome them.

The earth is ready to absorb and deodorize matters up to a certain extent. The plants are ready to seize the substance placed in the earth and prepared by it for their food. Let, therefore, the earth and the plant, as the means provided by nature to be employed both in town and country as far as practicable. The result will be purer air, better water, and enriched soil, that will give our teeming millions greater resources of food, which may be regarded more highly when it is considered the result of native skill, intelligence, and industry.

ARCHITECTURE AND POETRY.

A few weeks ago the council of the Institute of Architects made the mistake, as it seems to us, of allowing a paper to be read, and a discussion to take place, on the merits of an eminent living writer, Professor Ruskin.

Professor Kerr, in the course of the latter, said it is not always convenient to propose for discussion, in a society like this, the opinions of a popular writer; and it will be readily understood that no one could venture to carry the matter of the debate into the domain of literary misgivings. In point of fact, this meeting can scarcely be called upon at all to give expression, either directly or indirectly, to its opinion. At the same time we may, I think, trust ourselves to consider generally the condition of things architectural, which is indicated by what the lecturer has laid before us. It seems to me that Ruskin has done well in advancing no criticism of his own. He has also done well, I think, in confining himself to the mere attempt to condense, as I understand him, into a short statement, the essence of the views of this eminent author, as developed at least in his earlier, and perhaps best writings. One could easily perceive that the lecturer was not of the lecture, that he did not expect practical architects to agree in all respects, or even perhaps in many respects, with the theories which he was quoting. Indeed, as a practical architect himself, he could not but have felt, in the very process of quotation, how very limited was the extent to which such matters might be applied to any particular day work; and it is not unlikely that even Mr. Ruskin has often felt the same.

Now, I may venture to say that architecture seems to me to have been, during the last generation or two, very much overriden by theorists; and what I would now endeavour to do is to examine the position of Mr. Ruskin as a theorist and most popular of them. The position which he occupies is, in fact, one which has been arrived at by a direct and intelligible process; and this process it may be interesting to trace.

Some of our seniors remember, and all of us know, that less than fifty years ago the dilettantism of classic antiquarianism was supreme in architectural criticism. Everything in design was referred to certain more or less authentic precedents derived from the works of the ancient Greeks and Romans. Direct copyism, therefore, was not merely authorized, but universally inculcated. Every "attempt at originality," as the phrase went, was met literally with these very words:—"Where is your precedent from the ancients?" We may consider this absurd. But, at any rate, it was an absurdity so firmly established as to be deemed impenetrable for ever. We now see that it was impossible for such a romantic principle to remain absolute for any great length of time. The position of the dilettantism was material change. Accordingly before long it was found that a certain other romanticism had been gradually creeping into architectural learning, springing out of the same kind of admiring contemplation, not of the classic ruins of Greece and Italy, but of the Gothic ruins of Gothic architecture. It decided, very slowly (we are seldom sufficiently alive to these facts that our Medieval revival has been at this moment a whole century in progress,—thus swiftly does time move); very slowly, I say, and by imperceptible degrees a new kind of copyism arose—for Mr. Ruskin himself, with all his admiration of Gothic architecture, is decidedly enough, I believe, in the language we use with regard to this mere transfer of copyism from one field to another—a new kind of copyism arose, and every day gained ground, until the first was ultimately overthrown, but overthrown, be it observed, by nothing more elevated, or more elevating, than the precisely similar practice of the second kind of dilettantism, and of the medieval classicism had ridden architecture hard, those of the archaeological medievalism had come to be no less oppressive. Then came another kind of romanticism into view, which under the name of Eccelesiology acquired a distinct character and definite demands, becoming more a potent influence, and almost a ruling science. Suffice it to say upon this delicate point, that it is well known how deeply many of the best of us have deplored the embarrassment into which the theories of the ecclesiologists in their turn have led architectural practice during the last twenty years,—triumphant they are, and the influence of the ecclesiologists is not all; at the next step, new theories of the picturesque were introduced, and, apart from both archaeology and ecclesiology, took their place in architectural criticism. Many writers, thinkers, and designers in architecture have been very glad to dwell upon this element of the picturesque; and if they have gone too far, procuring it to be the one concern, without which architecture is of no value, there is certainly something of genuine art in the sentiment, compared with which the copyism of antiquarians and archaeologists, and the formulae of ecclesiologists, all alike fail to satisfy the intellect. At all events, here we have one more step in our march towards the present position.

The last step which seems to demand mention is the introduction of the theories of the poetic. Here, at last, we come to Mr. Ruskin. He is neither more nor less than the high priest of a faith which directly identifies architecture with poetry; and this for the first time in the history of the subject. Other writers have given us sentimentality and rhodomontade; but it is this writer alone who yokes together intelligently, and intelligently if such a thing were possible, the shapeliness and unshapeliness—both loved alike—of building, with the figures, fancies, paradoxes, and passages unutterably of the province of the poet. Such, then, being Mr. Ruskin's position, what has he up to the present moment made of it? Our lecturer has laid before us, from perhaps the best of his works, a pretty complete system of his principles; but what do they amount to? We cannot say they are canons of architectural criticism; we cannot say they are precepts of architectural practice; all we can say is that they are wayward architectural dreams. We listen, some of us charmed, some mystified, some amused, all

astonished,—fortunately none offended; but I fear none in any way edified. We perceive a certain sensation in the mind of having listened to a piece of masterly music thoughtfully and often powerfully rendered, but beyond its own utterance useless. When we are called upon to accept Mr. Ruskin's definition that Architecture is uselessness, let him not be offended if we put it thus, that this architecture of his is most emphatically useless.

I would not detract, however, from Mr. Ruskin's eminence in his own particular field; and I do not know that he himself has ever claimed the merit of any direct practical teachership in professional architecture, if some of us indeed, I fear those of us who assign to him so high a place in architectural criticism and in the advancement of architectural knowledge and skill, are only doing with him as he did with Turner, who is said to have declared himself all unconscious of the possession of those attributes which the Oxford graduate so elaborately discovered. It is very likely that Mr. Ruskin himself is much less ambitious than his admirers profess to believe him to be. But, taking him as a charming writer, and, as I have said, Priest of the visionary Poetry of Architecture, we will every one of us I am sure be most willing to assign to him a high place in the estimation of the public on architectural ground, in guiding brick and mortar with glowing words, no one can compete with him; but, as practical men, we must not forget, or permit others to forget, that when he brings to bear upon a subject so familiar to us that kind of thought and expression which is so significantly called "wordiness" in using the most treacherous of all possible arguments, fair and false, fascinating to the uninformed, but utterly unattractive to the initiated, and always dangerous to the young. I am most anxious not to say a word unjustly: I would not turn upon such a writer and challenge him to take pencil in hand and show us what he can do. I do not admit that he takes such ground as to entitle us to appeal to that otherwise infallible test; I prefer to allow him to say all he pleases, reserving only to myself the assurance that he desires to keep within rational and respectful limits; but I think it is at the same time most important that we should prevent him from being understood by the public at large—who know us for common sense and not for poetic passion,—that we architects are the admirers of this writer which we are often supposed to be. Give him all praise and approbation for his manly eloquence, his gracefulness of thought, his intensity and unimpaired honesty of purpose, and for his bold critical whininess; the more we praise the more suggestive, as all dreams are; but let it not be said that he is to be recognised as an architectural teacher. Mr. Ruskin is an honorary member of this Institute, and this shows the appreciation in which we hold him. We do not encourage his efforts; on the contrary, we honour them, but this is enough.

There is no doubt a certain definite philosophy which Mr. Ruskin develops in his studies of criticism (for this, I think, is the proper phrase); but it is never purely architectural—indiscriminately artistic, perhaps, and dramatic,—but never anything like an æsthetic system. For instance, it must have been frequently observed in what the lecturer read to-night that although there was something that bore on the face of it the appearance of æsthetics, yet when it came to an issue it proved to be not æsthetic after all, but romantic, and quite illogical. When Mr. Ruskin says there can be no architecture without building, and no goodness of picture without good building, this, as a general statement is one which, to his mind, as an uninitiated person, may be eminently suggestive of what may appear to be important truths; but we, who know what building is,—he not knowing it,—can see nothing in the proposition but the vaguest commonplace, to which he could not by any possibility attach real meaning or any detail. The suggestiveness is not that of metaphysics, therefore, but that of poetry,—and indeed of paradox, if we revert to the leading axiom, that architecture is uselessness. So in the whole of the propositions which the lecturer has quoted, some apparently sound, and some apparently un sound, there is really sound æsthetic canons, but only exercises of the poetic fancy. And why should poetry be brought thus to bear upon architecture? At the best it can be little more than a play upon words,—the suggestion of that which may be a fact by the assertion of that which must be a figment; and Mr. Ruskin, as a poet confessed, can never be

expected,—and it is in vain for us to demand it of him,—to condescend upon plain intelligible statements involving practical architectural principles. Let us look, therefore, at this great writer in that particular view, and I think we do him far more honour, and assign to him more creditably his proper place in the economy of architectural study, than if we thoughtlessly accede to a mere compliment of courtesy by which he is made to appear to be a great teacher of our art. I hope Mr. Ruskin will yet do great service to other art; but I have no hope of him in architecture. It is too complex a thing in detail, and too commonplace in practice, for such a person as we suppose. When we congratulated him in this Institute not long ago on his appointment to an important professorship of art, we did so cheerfully enough; and we may cordially believe that in fulfilling the duties of his appointment he will be able to work out some important principles of art; but for one can only hope that he will say less of architecture than of other arts. There is a great field open to such a thinker and such a writer in sculpture, painting, and the minor delineative arts; but architecture had better be left to other, not abler, but more practical hands. I think Mr. Ruskin has not written much on architecture lately. We have heard that he speaks even disparagingly of his country, that a great German philosopher says, "We are very near waking when we dream that we dream;" so also let us say that Mr. Ruskin has come all the nearer to correct principles of architectural criticism when he mistrusts his own writings.

I will not say that he has done damage to architecture, but must ask leave to suggest, if he will consent to devote the great powers bestowed upon him by nature to the development of poetic principles in arts of the more poetic sort, he will do more for the promotion of his own mental enjoyment and the public benefit than by random efforts in respect of that undoubtedly great and fascinating art which we know it best, which he will be nevertheless confined, as respects its poetry, within narrow limits.

STREET ARCHITECTURE IN BRADFORD.

The example set in London, Liverpool, Manchester, Leeds, and other large towns, of erecting large establishments for the purpose of carrying on the various departments of the retail drapery trade, is now being followed in Bradford. The local Observer lately recorded the completion of a large building erected in Westgate for this purpose. The building is about to be disjoined from premises they have long occupied in Market-street, by the improvements about to be effected in this quarter by the corporation, in the widening of Market-street and the continuation of Ilkgate. The firm have decided to rebuild, and plans have accordingly been prepared by Messrs. Knibbs and Co., for the construction of a new building for them.

By an exchange of land with the corporation, a square plot, with an area of 71½ square yards, has been secured, partially that occupied by the present premises, and situated at the junction of New Ilkgate with Market-street. The building to be put up on this site will have two fronts—to Market-street and to New Ilkgate—each over 80 ft. in length. The building will rise to a height of 54 ft. above the street level,—an elevation that will enhance its appearance all the more, inasmuch as the width of Market-street at this point will be 60 ft., and of New Ilkgate 42 ft. The building will have five floors, exclusive of the basement. The ground floor will be of the finest ashlar stone, and the style of architecture adopted is of an expensive and elaborate character. Massive rusticated piers, placed between the windows on the ground floor, will support the first floor, the windows of which will have pilasters with caps and bases. In the third and fourth stories the windows will be arched. The main entrance to the premises will be at the angle formed by the junction of the two fronts. There will be an Ionic column on each side of it, and the decorations will be carried upward to the roof, where there will be a balustrade, with ornamental finials. The building will be warmed by hot water circulating on the different floors. The back portion will be lighted by a well, about 29 ft. long by 23 ft. wide. The whole of the interior will be supported on ornamental cast-iron columns. The contracts for the various works required in the erection of this structure have been let to the following persons:—Mr. Thomas Burnley, mason; Messrs.

Booth Illingworth & Son, joiners; Messrs. J. Cliff & Co., ironfounders; Mr. James Keighley, plumber; Mr. James Smithies, slater; Messrs. Thos. Cordingley & Sons, plasterers.

Another addition to the shop architecture of Bradford is being made by Messrs. Watson, Brothers, who have now nearly completed an addition to their shop in Well-street, which will give up a large and lofty block at the junction of Market-street and Well-street to the purposes of their extensive business. The addition is being carried out under the architectural supervision of Messrs. Andrews, Son, & Pepper. The building is of four stories and basement, and is being completed with a total height of 120 ft., the new portion being 85 ft. in length. The style of architecture is Italian, and is to be of a character to correspond with that of the old front. Over the angle of the building intersecting Kirkgate and Market-street a circular tower is to be erected, rising 83 ft. above the ground. The whole front of the building is constructed of stone masonry, and the shop front is formed of an ornamental wood frontispiece. The kitchens are placed in the top story, in order to prevent any disagreeable smell from rising into the working portions of the shop, and hoists are fitted up connecting them with the several other floors, for the conveyance of kitchen materials, &c. Two hoists are also to be fitted up with heating apparatus. A great portion of the old property has had to be pulled down in order to the formation of an open area in compliance with the requirements of the corporation bye-laws.

LECTURES OF THE CAMBRIDGE SLIDE PROFESSOR OF FINE ART.

In the inaugural lecture delivered last week in the Senate House, Cambridge, Sir M. D. Wyatt said, among other things, that he had been for many years in France, Germany, Italy, and even to far away Russia, the fine arts had long ago received every encouragement from the proper authorities, whilst in England the deficiency had been supplied simply by the native energy of the student; and if that alone, without any civilisation, had achieved so much, what was there that might not be expected to be achieved if it were fostered and encouraged in the two principal seats of learning by such a noble benefaction as that of the late Felix Slade? The specific subject of his present discourse would be an examination of and attempt to reply to these three questions:—

1. What is fine art?
2. Why should fine art be studied?
3. How should fine art be studied?

In reply to the first of these questions, Sir Digby Wyatt traced the gradual development of art historical, from the savage to the civilised man, and the results of association in the establishment of historic style. He referred to the identity of style in the creation of the gods and of man's most perfect works, and the indispensability of shaping the latter in emulation of the former.

In discussing the second question, he assigned as first reason the sense of delight such studies confer on man; he found a second reason in the spirit of gentleness and refinement which follows as a consequence of art culture; a third he traced in man's instinctive desire to create and call into permanent existence forms of beauty conceived by his imagination and fashioned by his hands. A fourth reason why art should be studied was, he thought, to be recognised in the fruit such study bears to national importance; by such study alone, he said, can really healthy nations be seen, and enjoys the beauties of nature with a new and quickened organisation, and so long as art retained its universal and perennial interest, so long must it retain its hold upon man's affections. Whilst dwelling on this portion of his subject, the lecturer introduced the imaginary dialogue between a young man and an old man, in which the latter dwells upon the glory and beauty that would result from the erection and decoration of a series of buildings which should illustrate the triumphs of the country in arms, in arts, and civilisation. Happy the country worthy of such illustration, which had artists capable of executing and people capable of appreciating it. He concluded his treatment of the second part of the theme (how art should be studied) by dwelling upon the privileges and responsibilities which accumulate upon the artist as the fruits of such studies. They must, he said, study art unceasingly, laboriously, unselfishly, comprehensively, and conscientiously; for Art only granted

her rewards to those who, by constancy in the pursuit, proved themselves worthy of them. By investigation of any answer to that question will prove great benefit, and that benefit they should endeavor to extend to others, whereby the recipients would be all the richer, and the donors none the poorer.

In turning practically to the question of "How should art be studied?" the lecturer showed the dependence of any answer to that question upon a realisation of the initiative and constitutional nature of abstract and applied art. Having defined the leading conditions of these, and made manifest the extent to which they pre-determine, as it were, the limitations of practice, he observed that the first step towards any practice consisted in the education of the eye; the second, in the education of the hand. The first efforts necessary for the education of the eye he regarded as the analysis of, and consequent power to re-constitute, complex form. Such aims he attempted to classify, and to exhibit in the various modes in which they become visible, tangible, and reproducible through the contrast of light, shade, and colour. He dwelt upon the endless variety existing in nature, and susceptible of reproduction in art, as well as upon form as expressive of function, and the just expression of function as arbitrarily determining form.

THE SEWAGE QUESTION.

Leeds.—This town has made a large main sewer, emptying itself into the Aire about a mile below the town, but it now finds itself restrained from using it. This is the effect of a decision just given by Vice-Chancellor James. The decree will not begin to take effect till the last day of the next session of Parliament. It is expected that before that period arrives a general measure on the subject of rivers pollution will have been passed.

Bertham.—The state of the Don, and the possibility of getting the attention of the Rivers Pollution Commission directed to it, has been the subject of remark at a meeting of the Bertham Local Board.

A Scurvy Case in Chancery.—Vice-Chancellor Malins has delivered judgment on an information preferred by a millowner against the Local Board of Bishop Stortford, calling upon the Court of Chancery to restrain the Board from permitting the sewage of the town to flow into the river Stort, so as to create a nuisance. The plaintiff's witnesses complained that the river was in such a state that fish could not live in it; animals could not drink the water; and that "it had been converted from a pure and pleasing stream into a foul and filthy river." The Local Board tendered evidence contradicting every material allegation made by the plaintiff. The Vice-Chancellor said it was of the highest importance that the Court of Chancery should interfere where a nuisance had been created, but it was of equal importance that it should exercise its jurisdiction to stop those who come into court with a trivial cause. He was satisfied that the allegations of the plaintiff were grossly exaggerated and utterly untrue, and he therefore dismissed the bill, with costs against the plaintiff, who had sent the Attorney-General in motion.

THE TRADES MOVEMENT.

Glasgow.—At a recent meeting of joiners on strike in Glasgow for the nine-hours day's work, it was stated that thirty-eight employers had acceded to the full demands of the men. It was reported that there were upwards of 92 men still on the strike-roll, the others who had gone out having succeeded in getting employment elsewhere. The meeting seemed to be unanimously of opinion that the full demands of the men should be prosecuted, and arrangements were made for continuing the movement, as also for bringing on a number of other firms. The men were remained at work under the ten-hours system. It was agreed that, as the request for a conference with the masters had not been acceded to, the resolutions formerly passed should not presently be reconsidered, but that they should again be brought before a general meeting. In course of the discussion an opinion was freely expressed that though a conference with the masters regarding the by-laws, &c., might be advisable, there was no necessity to confer as to the present demands of the men, as they were determined to persist in their original request. At a meeting of the master joiners, Mr. James

Henderson presiding, the proposal of the operatives to hold a conference for the purpose of framing a code of by-laws for the trade was considered; and it was agreed to state, in reply, that the "masters are quite satisfied with the present by-laws of 1866, and therefore decline a conference on the subject."

Edinburgh.—At a general meeting of the joiners, a deputation from Glasgow having made a statement as to the present position of the dispute there, the following resolutions were unanimously adopted:—1. "That this meeting, after hearing the statement made by the deputation, approves of the position taken up by the joiners of Glasgow in their efforts to shorten their hours of labour to nine per day;" 2. "That this meeting, being convinced of the importance of the joiners of Glasgow reducing their working hours to nine per day, and believing that that object can only be achieved by the firm and decided action of the whole trade, resolves to raise subscriptions at once for the support of the non-union men."

SCHOOLS OF ART.

The Cirencester School.—The annual distribution of prizes in this institution took place at the Corn-hall. An address was delivered by Mr. T. S. Busley, of Hatherop Castle, who also presented the prizes. The attendance was not very large. The committee's report stated that the classes are still self-supporting, and that there has been a slight improvement in the second grade, though the students have been less successful in the third-grade examinations, and the schools for the poor also show a falling off in proficiency. They point to a considerable amount of sound steady work which the school is doing, and acknowledge the unremitting labours of the art master; but still they regret that the small sum of £100 offered by the evening classes is not sufficiently appreciated by the working men in the town.

The Dublin School.—The annual meeting of the Royal Dublin Society for the distribution of prizes in the Art School, has taken place in the theatre of the society. As on previous occasions, the Lord Lieutenant (who was accompanied by the Countess Spencer, and attended by several of the staff), presided. The attendance, including ladies, was very large. Mr. Mansell said that for the 140 years the school had been in existence it had sustained the reputation for taste which belonged to essentially to the Gothic race; and in the recent contest for the Princess of Wales' Scholarships, open to the entire United Kingdom, they had carried off in two successive years one of the two prizes, the other going to South Kensington. Colonel Adamson said the efforts of the committee during the past year had been principally devoted to an endeavour to extend art education amongst the lower classes. They had extended facilities to the artisans, of which there had been nearly 500 attendees at the school. They had used every effort to obtain the formation of a museum of ornamental art. By the kind assistance of Mr. G. A. Hamilton, an amount had been put on the public estimates which would enable a museum to be built adjoining the school, and which they trusted would receive the formal approval of the Chancellor of the Exchequer and of Parliament. They had great reason to be proud of the designs executed by the pupils for manufactures. They were anxious to utilize these by having them deposited in a depot for such designs, which it was proposed to form for all the art schools of the United Kingdom. The conduct of the pupils was admirable. All the children belonging to different classes and different religions, they worked harmoniously together. Colonel Adamson then spoke of the energy and zeal of Mr. Lyne the head master of the School of Art. The report stated that the attendance of students during the year has been 538, consisting of 252 males and 286 females. The attendance of the artisan class has been 356, consisting of 239 males, and 97 females. The total receipts in fees amounted to £100. 9s. 6d. The local examination of the school took place on the 9th, 10th, and 11th days of March, in the evening, when, notwithstanding the inclemency of the weather, 169 students presented themselves; 105 of whom, 61 males and 41 females, succeeded in passing examinations in 151 papers; consisting of 52 freehand, 40 practical geometry, 24 perspective, 32 model drawing, and three projection. The report of the judges of the works executed in competition for the Society's prizes, spoke of the satisfactory

progress of the school, and also complimented the master.

The Marlborough and West London School.—At the distribution of prizes to the students of the school in Portland-road, Mr. Peter Graham presided, and delivered a suitable address. He congratulated the students upon the success of the school, and he complimented the masters for the exertions they had made in promoting their success. He then referred to the great influence of art education upon the manufactures of the country, and expressed his astonishment at the apathy shown by the manufacturers of the district, the majority of whom did not contribute to the support of the school, and he trusted they would by their aid support make up for past deficiencies. Mr. G. A. Stuart, the head master, then read the report, from which it appeared that during the past year 479 students studied in the school, showing an increase of ninety-eight over the previous year, and in that number twenty-five different trades were represented. During the year, 271 students sent 1,999 works for examination at South Kensington, of which number the works of seventy-six students were marked satisfactory, nineteen received book prizes, four honourable mention, twenty works were selected for further "national competition," and 197 works were sent in for prizes of books. The national competition prizes were awarded to J. Bowley, G. Lettbridge, H. Noble, and E. H. Simmonds. In the ladies' competition in designs for fans, Caroline Pfander obtained honourable mention, and her design was purchased. The chairman then distributed the various prizes; and upon the conclusion of the distribution, a handsome time-piece, subscribed for by the students, was presented to Mr. W. Pilbory, who is about leaving the school.

The Warrington School.—The annual distribution of the prizes won by the students has taken place. There was a large assembly, chiefly ladies. The report stated that—

"the number receiving instruction in drawing in or through the agency of the school, during 1869, has been 325, showing an increase of ten since last year. This number includes 197 students who took part in the examination who had attended the Central School, from whom 132, 11s. 6d. have been received. The total amount of fees over an income of £18. 3d. for the year received last year. The attendance at the classes has been—Day classes, eighty-six students, who have paid 11s. 6d. and 12s. 6d. per quarter; Evening classes, fifty students, who have paid 12s. 6d. per month, and no entrance fee; total, 137. 17s. 6d. The total receipts of the school for books at the National Competition, in addition to which seventeen third-grade prizes of book-plates were awarded to students whose works were sent up for inspection; and seven second-grade prizes were awarded at the local examination; fifty-four students sent 1,100 works to the annual examination in London. Payments were made on account of the works of thirty-nine artisans. The public examination of the school took place on the 10th and 11th days of March, at which thirty-five persons presented themselves for examination, of whom forty-two were successful. An exhibition of their work took place in April, and was attended by 1,723 visitors."

PREMIUMS AND MEDALS OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute, held on Monday evening last, Mr. Charles Barry in the chair, it was announced that the president, Sir Wm. Tite, M.P., had presented a donation of 100l. to the Institute, the fund of the Institute, which was established several years ago in order to afford help to students travelling in pursuit of their professional studies. A letter from Professor Ansted was read, in which that gentleman tendered his services to deliver courses of lectures before the Architectural Art Classes, now in course of formation, under the auspices of the Architectural Association and other cognate bodies, and in aid of which the Institute has voted a sum of 50l. from its funds. The thanks of the meeting were voted to Sir Wm. Tite and Professor Ansted.

Mr. Herbert Ford, of Aldermanbury, and Mr. Charles Smith, of Reading (Associate), having been elected Fellows, the meeting was made special "to consider the recommendation of the Council with respect to the award of the Royal gold medal and other medals and prizes of the Institute for the year 1869-70."

The Chairman having read the recommendation of the Council that the Royal gold medal be awarded, subject to her Majesty's gracious sanction, to Mr. Benjamin Ferrey, F.S.A., member of the Institute, Mr. T. H. Wray, after referring to Mr. Ferrey's long and honorable professional career, proposed, and Mr. J. H.

Good seconded, the approval of the recommendation of the Council, which was adopted in the most cordial manner.

The other medals and prizes were awarded as follows:—
Roane Medal, with 50*l.*, under certain conditions (design for Railway Station in the Gothic style), to Mr. Ernest C. Lee, of Great James-street, Bedford-row; successful competitor for the Page Travelling Studentship for this year, and winner of the late Sir Francis Scott's Prize two years ago.

Estlin Medal, with 5*l.* guineas, in the competition for drawings, to Mr. R. J. Munt, of John-street, Adelphi.

Medal of Merit in the same competition, to Mr. H. Hill, of Court.

Institute Silver Medal, for Essay, to Mr. J. Huskinson, of Macclesfield.

Student's Prize, in Books, to Mr. Adolphus Cane, of Great James-street, Bloomsbury.

For Sir W. Tite's Prize, no drawings of sufficient merit were sent in.

The list of subjects for the medals and prizes of 1870-71 having been discussed and agreed to, the meeting adjourned.

ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting of this society was held on Thursday, the 10th inst., at the Rooms of the Royal Institute of British Architects. In the absence of the president (Mr. Sydney Smirke, R.A.), Mr. Geo. J. J. Mair took the chair.

The report of the council, read by Mr. J. G. Turner, showed that since the efforts made some time since to enlarge the means of the society, twenty-eight new members have been added to the list of subscribers, besides the augmentation of the funds by various liberal donations. Unfortunately, owing to the depression in all branches of art, applications had been considerably increased in number; and, therefore, the special efforts before alluded to had been most opportune. The report further went on to say that many of the early friends and liberal donors to the society had, during the last twelve months, been lost to it through death; and it concluded with an appeal to all its members not to allow their efforts to languish, but to pursue the good work on which they were engaged, thankful that they themselves were spared and able to carry on a task which they knew full well to be a becoming and a worthy one,—viz., that of assisting those who were helpless, and encouraging those who were unfortunate.

A discussion then ensued as to the best means of recruiting the subscription-list, in which Messrs. C. F. Hayward, Edwin Nash, and C. Mayhew took part, and during which it was elicited that the number of the subscribers to this society did not by some hundreds amount to that of the Royal Institute of British Architects; and that many disinterested applicants for assistance were very frequently responded to by the council, through the want of funds at their disposal.

Sir William Tite's account (the treasurer's) for the year showed:—

Total receipts	£410 13 11
Disbursements,—	
Expenses	£107 6 10
Invested	65 4 0
Gifts to applicants	150 0 0
	£423 10 4

Leaving a balance in hand—£73 17 7

The sum of 107*l.* 6*s.* 4*d.* expenses included cost of special appeals to the profession.

The amount received by donations in about twenty years, and invested, amounted to 1,547*l.* 1*s.* 3*d.* stock.

The election of council and officers and other routine business was then proceeded with, and various votes of thanks were passed.

"MEMORIALS OF TEMPLE BAR."

Sir,—I thank you for your notice of my little volume, and have to acknowledge the justness of your remarks as to the crowded nature of its contents. My apology is conveyed in the preface to the book,—a "desire to give as many facts in a cheap and collected form, so as to be within the reach of every citizen of London."

May I ask a small space to correct a slip in your notice—trifling, yet of interest. It was Lord Belairs, not Bellegare, who was appointed to the command of the Tower, and built Temple Bar at the time of the Fire of London. Though he deserted his post here, he was, nevertheless, a trusted officer in the service of the First Charles, sharing the troubles of the Civil War, and receiving many appointments of great trust. He was at various periods Governor of York, Newark, Tangier, and India; Lieutenant-General of the Tower; eldest Colonel of the Twelfth Regiment of Volunteer Noblemen in the second Dutch War; and yet did not escape having to fight a duel in the Marylebone fields, in the cause

of the beautiful wife of the jealous Earl of Orlilah, a daughter of Edward Lord Howard, of Bewick. He was no less than four times sent a prisoner to the Tower, and only escaped by the narrow chance the Tower-hill scaffold for a supposed hand in the Tins Oates plot. His head was much nearer to Temple Bar than that his body should have been some years previously. He served each king in offices of trust, assisted to restore Charles II., and eventually was appointed by the Protector, James II., a Privy Counsellor and First Commissioner of the Treasury. He died September 10th, 1689, and was buried in the churchyard of St. Giles-in-the-Fields. This notice of a remarkable character I trust you will not consider worthless, especially as it is derived from the Birch MS. 4162, in the British Museum, fo. 74-84.—A Brief Relation of the Life and Memoirs of John, Lord Belais, written and collected by his Secretary, Joshua Moore.

As for the "Memorials of Temple Bar," I assure you my materials are not exhausted, and I yet entertain a hope to bring out, some time hence, a more creditable history of a remarkable London building, and a world-renowned City street.

T. C. NOBLE.

ARCHITECTURAL ART CLASSES.

THE arrangements for opening the classes at the Architectural Museum, are progressing; but subscriptions are needed.

All students of architecture and the cognate arts will be eligible for admission.

The meetings of each class will be divided into two sessions of four months in the year, commencing with the opening of the Architectural Association.

The Course will consist of the following classes:—1. Drawing from the flat and round; 2. Drawing from the life; 3. Modelling; 4. Color decoration; 5. Water-color drawing; 6. Perspective and sciography; 7. Architectural drawing.

Admission is to be by separate fees for each course, proportioned to the expense of the class, and as moderate as circumstances will admit.

"ARCHITECT, BAKER, AND DEALER IN CHAFF."

Sir,—What is the profession coming to? In a *Whornsey* paper I find advertisements from a firm, call them *Stitcher & Co.*, setting forth—first, that they are architects and surveyors, and that the plans of a chapel they are about to build may be seen at their office; then that they are auctioneers, and have "the following valuable property to sell." Among comes the announcement that they deal in "bricks of every description, slates of all kinds, chimney-pots, gravel, garden mould, paints, oils, and colours." While, to and behold! elsewhere they advertise that they are really "bakers, confectioners, corn merchants, and dealers in chaff."

I enclose the various advertisements, or you will scarcely believe that I am not a dealer in chaff myself.

PRODIGIOUS.

BIRMINGHAM FREE ART GALLERY.

AN instructive little catalogue has been written of the objects of art and art manufactures of the Birmingham Free Art Gallery; it is calculated to increase the interest with which the collection will be visited. The writer contends with justice that the abuse which has been heaped wholesale on the ornamental manufactures of Birmingham, may be traced to the absence (until recently) of any collection of objects calculated to cultivate the aesthetic faculties of its artisan population. The absence of such means of education has been dearly paid for locally, and has cost more in the aggregate than the maintenance of a dozen art galleries.

An appeal is made for the distribution of the superfluities of the National collections. It has been shown, as our readers know, that these would suffice to form several collections of works of art for distribution in the provinces. On the 10th of July, 1869, on the occasion of the vote for the educational supplies being put in "the House," in answer to a question asked by Lord Henry Lennox respecting the distribution of the superfluities of the National collections, a reply was given by a Lord of the Treasury, that two collections of Turner drawings had been chosen, and would be established in Dublin and Edinburgh. "The provinces were passed over, and will

be, until untold action be taken by members of Parliament, and a fund be formed by them to demand from the Lords of the Treasury the immediate selection of the superfluities from the National collections, the formation therefrom of one collection, its division, and the distribution of the parts to localities, in order to aid the public generally, and the art and special industries practised in each. In this way alone can strict justice be done as regards the proper distribution of works of art to provincial art galleries, that of Birmingham being specially included.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE II.—continued.*

WE have now arrived at a stage of our investigation when we must pause for the sake of asking ourselves what more or requirement yet remains unsatisfied, which was essential to the perfecting of our arched developments, and what means remained—hitherto unused—by which such need might be met.

We have followed out an arched construction, and the process by which it was rendered at once susceptible and productive of artistic beauty, till we might fancy that we had reached the goal; additions of refined art to render it a perfect style; and it would be both an interesting and a profitable field of speculation to take up the style at such a point, and to study how best to clothe it with the charms of the highest art, irrespective of our knowledge of its historical destiny; how, in fact, to perfect our round-arched style to the highest and most elegant artistic standard, and I feel that any one who could fulfil such a task would be a benefactor to our art.

The semicircle is unquestionably the typical form for an arch, and one well suited to the majority of purposes and positions. I, therefore, wish well to him who wishes to push a style which claims to be the last and the most elegant to the highest possible pitch of perfection. I should rejoice to see a round-arched style rendered as perfect, and its accompanying art as noble, as the Greeks did their trabecated architecture and its ever-glorious sister arts; nor do I see why such an end should not be attained, and God speed the man who really attempts it.

This task was, in fact, nobly though unconsciously approached by the artists of the twelfth century; nor can any one examine their works, particularly from the close of the first quarter of that century, without being filled with the warmest admiration at their determined strivings after refinement; their earnest attempts to give every form, and to eliminate every footstep of barbaric element; to rid their work of all rudeness of execution; and in every way within their reach to raise the architecture they were developing into a really high art.

These earnest and restless strivings, however, had the effect of rendering apparent the defect, both structural and artistic, in the conditions prescribed by a round-arched style. They had freed themselves from the trammels of the arbitrary rules of proportion, and might render their structures lofty or the reverse at pleasure; their columns might be as short and sturdy as the most archaic Doric, or might outdo the most gigantic Corinthian in the lightness of their proportions; yet the arch they were condemned to carry was limited in height to one-half of its own diameter; or, if allowed to exceed this, by means of stilted. This was evidently but a clumsy expedient, and only suited to particular positions.

The whole tendency, too, of the onward movement of the art was towards increased height, and while walls and pillars might avail themselves to the full of this upward striving, it was hard that the arch—the very essence of the style—should be condemned to unalterable stuntness. Proportion evidently claimed that the arch should have its full share in the increasing height of the buildings, yet the inexorable semicircle said,—"Nay; my proportions are fixed. You may lengthen your straight lines as you please; but by no law of science can my height exceed one-half of my width."

A geometrician might reply that the semicircle might be strobed upwards into a semicircle given by the law of the upright. I do not think that our Medieval builders ever tried this dismal experiment, nor do I know that it was ever attempted, except by the barbarous Par-

* See p. 116, ante.

* The drawings marked "N. B." sent in for the Roane Medal, are so good that we could have been glad if the council had awarded some recognition.

thiana, in a building you will find figured in Mr. Ferguson's hand-book; and so hideous was the result that one may well suppose it to have been handed down as a warning to subsequent generations!

Nor was this craving after a loftier arch the result of taste alone. Constructive motives pointed in the same direction for it was found that round arches, when carrying great loads, as those sustaining towers, &c., were apt to overcome the resistance of their piers; and many failures were the result. The same was found to result from vaulting over wide spaces. True it is that the Romans, in the great halls of their baths, had vaulted over spaces of double the width of the arches, when carrying great loads; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault. Besides which, the Mediæval builders aimed at raising the springing of these vaulted naves to the height of the surrounding cathedrals; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault. Besides which, the Mediæval builders aimed at raising the springing of these vaulted naves to the height of the surrounding cathedrals; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault.

Another motive might have led to a similar aim. We have seen what difficulties and contrivances resulted from the exigencies of vaulting over irregular spaces where it was desirable that the crown of the vault should be of the same height as the surrounding cathedrals; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault. Besides which, the Mediæval builders aimed at raising the springing of these vaulted naves to the height of the surrounding cathedrals; but this had been effected at the expense of the utility of their aisles, which were cut up into short lengths by the ponderous abutments needed to sustain the tremendous pressure of the central vault.

The claims, then, of proportion, of construction, and of geometrical convenience, all led to the same design, and demanded an arch of variable proportions.

This three-fold demand was met by the introduction of the *Pointed arch*.

To apply this to our main subject of vaulting, we at once see that, in addition to constructive advantages, the arch could now be proportioned in height to its supporting piers, and the unequal sides of the vaulted spaces could now be arched in such a manner as to satisfy the exigencies of the vaulting without the necessity of resorting to awkward contrivances; so that an accession was obtained at once of strength, beauty, and facility of application.

I have some time since called, the use of diagonal ribs the *Magnum Charta* of the art of vaulting; but it must share this honour with the *Pointed arch*. Let us now proceed to trace the progress of the art under this double charter of liberty.

The first introduction of the *Pointed arch* into vaulting seems to have been made without a full consciousness of its advantages. It was first used as a view to strength and general beauty than to the convenience of covering irregular spaces; for in many early specimens,—as originally in the Cathedral of Sens, and in the work of William of Sens at Canterbury,—the round arch continued to be used in the narrow bays against the walls, where the pointed arch was used for the wider spaces. In nearly all English specimens, however, full advantage was at once taken of the newly attained freedom: thus, at St. Joseph's Chapel, at Glastonbury,—a work otherwise purely round-arched,—the groining assumes throughout the pointed form, the narrow bays being especially so. The same is the case at St. Cross, another very early transitional work; and in the nave and transepts of St. David's Cathedral (erected about 1190), though the groining was never carried out, we have the preparations for it with pointed wall-ribs, while the round arch is mainly used beneath. I shall, therefore, disregard this occasional inconsistency.

Before going further, I will, to prevent mistake, give the names of the parts of a groined compartment. The main ribs from wall to wall are called by us *transverse ribs*; by the French, *arcs doubleaux*. Those which pass from angle to angle, intersecting in the middle, we call *diagonal ribs*; by the French, *arcs ogives*. Those which adhere to the wall, we call *wall ribs*; by the French, *formettes*. If there is a rib or moulding along the apex, we call it a *ridge rib*; by the French, a *terme*. The latter, however, does not exist in early examples. Other features appear as we proceed, but I limit my first list to the simpler forms of vaulting. The French names are found in the treatise of Philibert de l'Orme, a work of the sixteenth century; whether they have been tradition-kept up I do not know, but they are now universally adopted by French writers on the subject.

I will just go over our leading cases, already

treated of, showing the changes effected in them by the use of the pointed arch.

In the square groined space with level ridges there was no alteration excepting in the form of the arch, and in the more finished mouldings made use of. The diagonal ribs often took the form of a round arch, but this depended wholly on the proportions of the surrounding pointed arches.

As the diagonals were not formed by elliptical curves, it followed that the vaulting surfaces were not portions of cylinders, and that an error had to be thrown into them. In fact, they were filled in from rib to rib without any view to purely geometrical forms. The pointed arch was applied to an oblong compartment, or to the sides of a polygonal apex, its advantage becomes more manifest; for the power of making the narrow arches against the walls as high as we please wholly removes the difficulty which we encountered while limited to the round arch, and that without the necessity of the pointed arch, the convenience which the last-named method offered for the introduction of windows still led to its frequent use.

The irregular compartments of an apse and aisle ceased now to present difficulties as all their arches could be made of equal height.

It is curious that, while we have in London the remains of such a variety of the pointed arch (those in the Tower of London and St. Bartholomew's), so have we also two in the pointed-arched style, and those very different indeed in their treatment. The aisle round the apse of Westminster Abbey has compartments enormously wider on one side than on the other, and this is simply by the varied proportions of the arches; while that surrounding the round portion of the Temple Church has double as many compartments as there are pillars in the arcade, and consequently behind every arch of the great arcade is a groining compartment which is nearly square, while behind every pillar is one of a triangular plan, vaulted in a peculiar manner from its corners without any ribs between the transverse ribs.

The vaulting of a polygon with a central pillar assumed now a form of exquisite beauty. Its two special types in its simpler form are the chapter-houses at Salisbury and Westminster,—truly a noble *fratrum*,—and claiming special mention for showing the extraordinary beauty attained by the use of ribbed vaulting united with the pointed arch.

I have already mentioned that in this form of vaulting there is a choice between two methods of effecting it: either by supposing the main vault to span from wall to pillar, or from angle to angle, and vice versa.

The former is, on a *prima facie* view, the more natural, but it has the disadvantages of breaking the chief side of the vaulting compartment which rises from the corners into a resultant angle, and also of rendering the main ribs from these angles across to the pillar, in one half of their length *diagonal ribs*, and in the other *transverse*; and of making one half represent a *projecting* and the other a *receding* angle, while the angle ribs of the outer half meet the *transverse ribs* of the inner half of the vault.

These objections are entirely removed by supposing the main vaults to run directly from the angle to the pillar. In either case the ridge which surrounds that half of the vault which springs from the pillar takes the form of an inner octagon.

In the first case, the sides of this are parallel to the walls, while in the second they take an intermediate direction; the angles of the inner octagon being opposite the centres of the sides of the outer one, and vice versa.

The vaulting compartments which rise from the angles of the great octagon are precisely similar to the opposite ones which rise from the pillar, and the ribs which rise from the angles to the pillar are throughout *transverse ribs*, while the angle ribs from each side only meet one another, and are *diagonal ribs*, and vice versa.

I exhibit a model of a portion of the vaulting of the Chapter-house at Westminster, prepared by the clerk of the works, Mr. Kaberry; also a view of the interior, to show the beauty of this form of vaulting. Few forms, in fact, in any style of architecture present such beauty as an octagon vaulted in this manner, and I am happy to think that our London specimen, which has been lost for the last century or more, will now very shortly be restored to its original form and condition.

I have already mentioned that in all these forms of vaulting,—that is to say, those with

level ridges,—owing to a geometrical error resulting from the use of circular curves for all the ribs, the filling in of the vaulted spaces must be artificially shaped to fit those curves.

The use, however, of a form of vaulting analogous to that before described as having raised ridges would obviate this inaccuracy.

Suppose, for example, an oblong compartment with pointed arches of similar proportions on all its sides and on its diagonals, and the vault of each cell generated by the motion of the curve of the surrounding arches towards the point of intersection, guided by the diagonals, we obtain at once a vault with pointed arches and raised ridges, the precise correlative of that before described, but of similar proportions on all its sides and on its diagonals, and the vaulted spaces assume a systematic and accurately geometrical form.

The proportions of the arches are not essential, though the form I have supposed may be considered the most perfect, as where the narrower arches are of similar proportions to the wider ones, a curious effect is produced on the form of the ridge, which, always elliptical, becomes then so obviously so as to be unperceived.

This form of vault was of very frequent use, though the exact method of filling in the spaces was not rigidly adhered to. Its disadvantages were, however, few, and it was very readily available for windows, or run up so high into the roof as to interfere with its construction. It is in many cases, however, a very convenient, as it is a very rightly, form of vaulting.

Even the simple form of vaulting with level ridges is not always convenient for windows, particularly where the vault is wide, and the ridges are to fill the whole space. This led to the practice of tilting the wall-rib to such a degree as to have the effect of twisting the groined surface of the cross vault to an extraordinary extent. This may be seen in the vaulting of the cells adjoining the cloisters at Westminster Abbey, and in the choir of St. Saviour's, Southwark, where the twisting of the surface has received the very appropriate name of *plough-arch vaulting*.

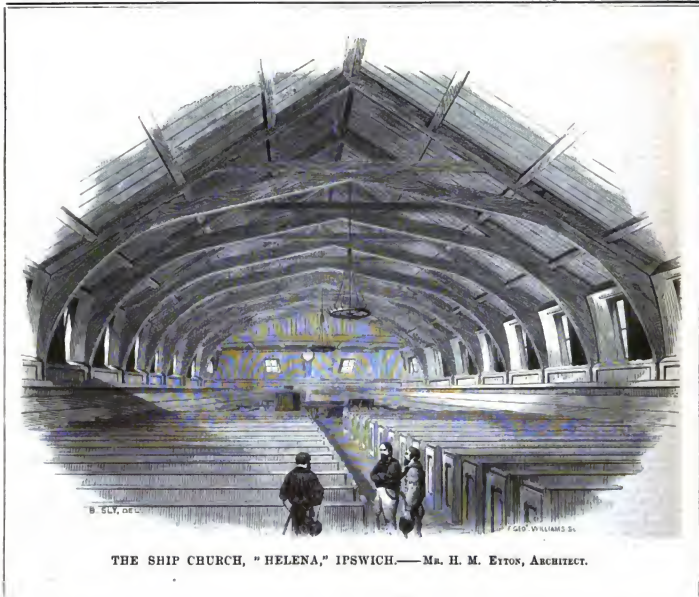
The liberty which was felt in dealing with the surfaces of vaulting-spaces, when once the salient lines became emphasized by ribs, led to the practice of the "doming up," as it is called, of those parts of the vaulted surface which were level; that is to say, that such course of the filling in stonework was often laid on a course, so as to increase the strength of the work, by rendering every course a kind of arch from rib to rib.

I must, however, reserve to my next lecture a description of many of the forms which the vaulting of this period assumed, and the number of practical facts relating to it; as well as the pursuit of the subject into its more advanced history; where, instead of limiting its features to such as originated in obvious and functional utility, others were added for purely decorative purposes. The subject is so extensive that I am compelled to divide my lecture upon it briefly.

Let us, then, pause here and consider for a moment the artistic sentiment and character of the stage at which we have arrived. I will suggest, in passing, that this stage in which no architectural features were introduced for mere purposes of decoration, and which consequently leaves wide vaulting spaces, is peculiarly suited to the extensive introduction of the works of the sister arts of painting and mosaic, which may be used almost as freely here as in the Byzantine domes. The point to which, however, I desire to direct your attention is rather the purely architectural sentiment.

Small as is the difference of principle between the later Norman vaulting and that under consideration the impression produced upon the mind is entirely changed. The one suggests weight and pressure systematically met and resisted; in the other those forces appear to have vanished; and the effect suggested is rather a shooting upwards, and the growth of a tree, than any downward pressure towards the earth. True it is that, in the decorative treatment, a colonnette is placed under every rib or group of ribs as its artistic support; yet, in its effect upon the imagination, the action is reversed. It is not the column bearing the weight of the arch ribs, but the latter springing vigorously upwards from the column.

Who, while viewing a stately tree in the pride of its growth, ever thinks of its weight or of the pressure of its boughs upon the stem? It is with its upward soaring that the mind becomes impressed; and just so it is with the interior of a Gothic cathedral. The perfection



THE SHIP CHURCH, "HELENA," IPSWICH.—MR. H. M. EYTON, ARCHITECT.

with which all physical forces are met has to the mind the effect, not merely of having annihilated, but of having actually reversed them. So that upward striving, stately growth, and heavenward aspiration are the ideas customarily suggested as illustrating the impressions produced. The lofty avenue, with its intersecting branches, has become the chosen similitude to which it is popularly likened, and it has been universally received as the form of architecture most expressive of the heavenward soarings of our religion.

No one who contemplates our glorious Abbey Church of Westminster, and lays his soul open to its inspiration, can fail to feel sentiments in harmony with those suggested by the cognizance of its saintly founder—selected as it in anticipation of its future glories—the symbol of our religion surrounded by martlets, whose feet are erased in token that they have lost all tendency to rest on earth, but, like the aspirations of Christian worship, ever mounting on the wing towards the supreme object of adoration, and

"Flying up to Heaven's gate second,
Bear on their wings and in their notes His praise,"

THE SHIP CHURCH "HELENA," IPSWICH.

We spoke in our last of endeavours that were being made to meet the spiritual wants of sailors in the port of London. To provide in a similar way for the sailors in the port of Ipswich, the rector of St. Clement's, the Rev. R. H. White, applied to the Lords of the Admiralty for a ship, and obtained from them the *Helena*, a fourteen-gun sloop, which is now moored in the dock at Ipswich, and is fitted as a chapel and residence for the chaplain; it being a well-known fact that sailors have a great dislike to attend the ordinary places of worship, and the floating churches which have been provided in the various

ports being generally well attended by the seamen.

To alter the ship into a chapel and residence pains have been taken not to change the general appearance of the ship, and, with the exception of the roof and a small porch, there is nothing in the exterior to denote the great change that has taken place inside. The ship is moored 40 ft. from the shore, and is approached by a lattice wooden bridge, 10 ft. wide, fixed at the shore end, and resting on two bearings under the porch, so as to rise and fall with the tide.

On entering at the level of the main deck, through a doorway cut in the side of the ship, every one must be struck with the great size and the ecclesiastical appearance of the interior. The whole of the upper deck being cleared away over that portion used for the chapel, leaves the hull from the main deck to the top of the gunwale, 11 ft. high, the height between decks being 6 ft.; an open-timbered roof was framed over the hull at the level of the gunwale, with principals between each port with carved ribs, which were brought down to the level of the upper deck, and follow the curve of the side of the ship. The whole of the roof is of deal, stained and varnished: a panelled string was formed round the ship at the level of the upper deck to hide the ends of the beams which had been sawn off, and the rough appearance caused by the removal of the deck and beams. The fore-castle deck was left, and covered with corrugated iron, and forms the roof over the "chancel;" the underside, being too rough to scrape and varnish, was painted, grained, and varnished. The eight ports on each side had the reveals lined, and sashes inserted hung on pivots. The hole for the bowsprit was also glazed.

All the fittings, which are designed in a simple ecclesiastical style, are of deal, stained, and varnished, with the exception of the Communion rail and the chairs on each side, which are of oak. There is a raised dais at the stern; and the

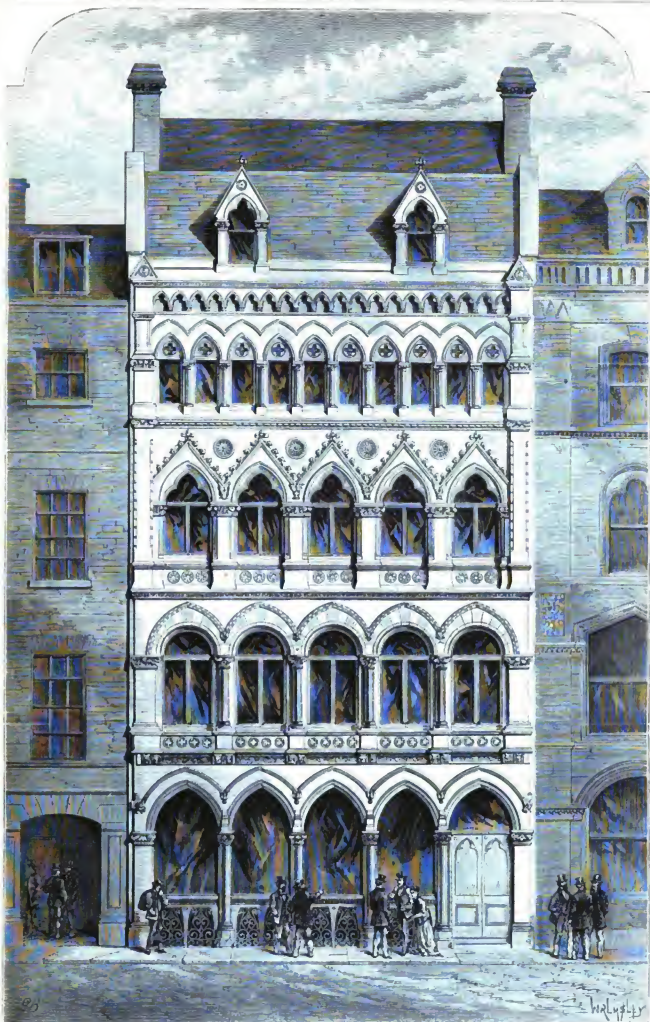
Communion-table is fitted into the bow of the ship, with a projection in the centre of 1 ft. 6 in. by 2 ft. 9 in. wide, with wings on each side with opened panel tracery-work lined with red cloth. The seats on each side are fitted into the side of the ship.

Accommodation is provided for 500 persons in forty-two seats in the body of the chapel, and six cross seats in the "chancel;" the dimensions being 88 ft. long by 35 ft. in the widest part.

The chapel is lighted by three circular pendants and two brackets in the chancel, gas being brought in under the bridge.

The residence for the chaplain comprises 30 ft. of the stern end. The bedrooms are on the main deck, which is divided into three rooms. The fittings of the bed-berth of the captain are preserved in one room, and the others are fitted up in a similar manner; one of the bedrooms serving as a vestry, with a door into the chapel. The bulwarks of the upper deck have been raised to 10 ft., and covered over with a flat roof covered with corrugated iron, and the space divided into four rooms and a water-closet; two of the rooms are fitted as a kitchen and scullery, the water being laid on similarly to the gas. The other rooms are fitted as a sitting-room and study. The bulwarks of the ship being 10 in. thick, and the new framing 3 in., the remaining 7 in. have been taken advantage of in forming closets in the kitchen, scullery, and sitting-room, and book-shelves in the study: all the rooms are lighted by windows hung on pivots, and the staircases and passages with a skylight.

Mr. Lambert, ship-builder, of the Cliff, removed the upper deck, built the roof, and the chaplain's residence and fittings. Mr. Cunliffe, builder, did all the interior fittings of the chapel. Mr. Curtis, of the Ship-lantern, superintended the alterations and the mooring of the ship; and all the work, which has cost a little over 1,000*l.*, has been carried out from the designs of Mr. H. M. Eyton, architect.



LONDON STREET ARCHITECTURE: OFFICES, THROGMORTON STREET AND AUSTIN FRIARS.
MR. T. CHATFIELD CLARKE, ARCHITECT.



LAMP STANDARD AND LAMP, THAMES EMBANKMENT.

Designed by Mr. Bazalgette; Modelled and Manufactured by Messrs. Turner & Allen.

Miscellaneous.

The Martyrs' Memorial in Smithfield.—On Friday afternoon, the 11th, the ceremony of unveiling the memorial erected in Smithfield in honour of the martyrs to Protestant truth, and also for the purpose of indicating the precise spot on which they perished, took place. The memorial occupies one of the arched recesses in the external wall at the north-east corner of St. Bartholomew's Hospital, and consists principally of red and grey polished granite, the more ornamental parts having been executed in bronze. The head of the memorial is semicircular in form, with a large high arch in the centre, set off with mouldings. Between them is the text, "Blessed are the dead which die in the Lord." The cornice also consists of mouldings, and bears the text, "The noble army of martyrs praise Thee." This is supported by pilasters, between which there is with the following inscription:—"Within a few feet of this spot John Rogers, John Bradford, John Philpot, and other servants of God, suffered death by fire for the faith of Christ in the years 1555, 1556, and 1557." On the base there is another inscription:—"Near this place is erected a church, the memory of the said martyrs." The whole is protected by a wrought-iron grille. Messrs. Habershon & Pite made and presented the design of the memorial, which has been executed by Messrs. Cox & Son, of Southampton-street.

Tewkesbury Abbey.—There is now every prospect of a thorough restoration of this fine old building. The committee have already received promises of subscriptions to the extent of 3,000l., and a grant of 300l. is promised on behalf of the trustees of the Warneford Ecclesiastical Charity, with an intimation that a further grant may be made on the completion of the work. Mr. Scott has made a survey of the building, and he estimates that the following more urgent works may be completed for a sum of 4,850l.:—The cleaning and repairing of the stonework of the interior; the repairs of the roofs; the reflooring and repairing of the parts especially used for service; the removal of the partitions and of the organ, placing the latter upon a new screen; the removal of the transept, the removal of the old stall-work to the choir, with its entire restoration; the addition of canopies to such as require them; the adding of nine new stalls, with canopies, and of desk-fronts, &c., to the whole of the stalls; a new choir-screen, pulpit, lectern, &c.; and the complete rearing of the church, so far as needed, and with some addition to the present rood.

Town Hall, Stone.—The new Town Hall at Stone has been opened by public dinner. The style of architecture is Italian, and the front of the building is faced with white bricks, Hollington stone being used for the windows and dressings. The chief door is in High-street. The large hall measures 60 ft. by 34 ft. 6 in., and 25 ft. in height. One end of it is a platform, convertible into an orchestra. There are two brass pendents from the roof, and a third one is to be placed between them rather lower. It is estimated that the saloon will accommodate about 400 persons seated. In the rear of the hall is another entrance, and in connection with it are waiting-rooms and offices. Over the waiting-rooms and other parts of the building in the front there is a large library and reading-room, 36 ft. long by 16 ft. wide, a place for the librarian, and a cloak-room, with the usual offices. In the top story there are suitable sleeping and other rooms for the porter. The building has a frontage to the High-street of 50 ft. in length, and about 40 ft. in height, and rising above the parapet in the centre is a stone case for a town clock. The estimated cost of the building, without the fittings, is about 2,500l. Mr. Frederick Bakewell, of Nottingham, has been the architect, and Mr. Whitmore, successor to Mr. Eley, of Stafford, the contractor. The site, which cost about 1,000l., is that of the Old Blue Bell, and it would be in extent three-quarters of an acre. Nearly half an acre of ground remains to be used. The building has been erected by public subscription.

Royal Horticultural Society.—The Hyacinth Show, held on Wednesday last, in the Conservatory, in conjunction with Mr. W. Paul's annual show of spring flowers, which latter is continued during the week, was a success, and gave pleasure to a considerable gathering of visitors.

Girdled Trees bearing Fruit.—Our readers have heard of the atrocity of girdling some 1,500 fruit-trees near St. Joseph, Michigan, last spring, says the *Canada Farmer*, and how the neighbourhood turned out in a body and bandaged them up, so as to save them. It will be interesting and gratifying to learn that every one of these trees is living, and that Mr. Green, the owner, has realised an immense crop of fruit from them in the past season. Those wise in such matters explain it by saying that the interference of sap by girdling has caused the production of fruit instead of wood this season, and that the real trial for the life of the trees will come next year. It used to be thought that there was no help for a girdled tree; but that theory is now exploded. In this case the damage was remedied by bandaging the trees with strips of cloth dipped in wax. Mr. Lemuel Town, of New Hampshire, we believe, grafts five or six inches as large round as a goose-quill, and long enough to reach over the girdled place into the tree. The live bark is first notched above and below the girdle, the sprouts sprang into place, and the ends fastened with wax. These scions grew rapidly, and in time spread over the whole girdled surface. We have heard before of purposely girdling tree-branches, in order to increase their crop of fruit.

Edinburgh Architectural Association.—At the annual fortnightly meeting of this Association, Mr. Thomas Ross, president, in the chair, the business of the evening was a resolution moved by Mr. Wm. Beattie, architect, and seconded by Mr. Archibald Sutter, civil engineer, viz.:

"That the different methods followed by surveyors in the measurement of work is productive of inaccuracy and loss; and that, in the opinion of the Edinburgh Architectural Association, a uniform system of measurement should in future be adopted by all surveyors."

Mr. Beattie pointed out the evils resulting from the present want of uniformity, to the architect, the contractor, and the public generally. He advocated a more detailed and analysed system of measurement, and that the old practice of allowances should be entirely discontinued, and net quantities universally adopted. He contrasted the English and Scottish systems of measurement, and stated that the former was more minute and detailed in its dissection of the work. Mr. Ormiston, surveyor, criticised the resolution proposed by Mr. Beattie, and stated that dissection followed, in which Messrs. Paterson & Ross, architects, and Messrs. Lawrence & Russell, surveyors, took part. The resolution was unanimously adopted, and it was resolved to call a special meeting at an early date to take some practical steps in the matter.

Shifnal Workmanship.—The King of Prussia recently visited a needle-manufactory in this kingdom, and was shown a number of the finest needles, thousands of which together did not weigh half an ounce, and marvelled how such minute articles could be pierced with an eye. The eye-borer asked for a hair from the King's head. He placed it under the boring machine, made a hole in it, furnished with a thread, and then handed the needle to the King. The *Scientific American* says that a curious needle is in the possession of Queen Victoria. It was made at the celebrated needle-manufactory at Redditch, and represents the column of Trajan in miniature. Scenes in the life of the Queen are represented in relief, but so finely cut and so small that it requires a magnifying glass to see them. The Victoria needle, moreover, can be opened. It contains a number of needles of smaller size, which are equally adorned with scenes in relief.

Science, Religion, and Politics.—In our recent article on the Easter Island statues, we quoted the opinion of Professor Unger, of Vienna, at that time one of the greatest of living philosophers; we regret to learn that he has recently been found murdered in his bed at Graz. No trace of the murderer could be found; so a priest at Gilly asserted in the pulpit that the devil himself had probably murdered the professor, whose soul he could justly claim on account of his philosophical writings. M. Raspail, the well-known writer on botany, agriculture, and chemical subjects, is the same as the "irreconcilable" M. Raspail, the political agitator.

London Corn Exchange Competition.—To the name of architects who were invited and are preparing designs should now be added, we are asked to say, that of Mr. G. Barnes Williams.

Lady Huntingdon's Chapel, Brighton.—The trustees have decided upon rebuilding this chapel upon a new plan; and plans, prepared by Mr. Winchle, of London, have been selected for the purpose. The new edifice, which is to be surrounded by a spiral, is to be considerably higher than it is at present; and, by taking in a piece of ground at the side, the width will be increased by some 6 ft. There will be two Gothic windows, with circular light over, in the north front; and the entrance will be by three buttresses, provided with sliding shutters, which will be opened by a spiral. It is proposed to have a large memorial window of stained glass, in memory of the late pastor, the Rev. Joseph Sortain. The interior of the chapel will be considerably altered and improved. There is to be no gallery, as at present, at the south end, but a small chapel built there, the organ being removed from its present position to the west side of the chancel; and the roof of the building is to be open, with a clearstory. It is thought that 4,500l. will cover the entire cost of the alterations, of which sum about 3,000l. have been subscribed.

Telegraphic Progress.—Submarine telegraphy is described as the mains of the hour, and, at all events, it completes a submarine transit, and the cables now being projected in every direction; but the most daring scheme of all is that just put forward for complete telegraphic submarine communication with Canada (double line), Bermuda, West-Indies, Demerara, Ansonian, St. Helena, Cape of Good Hope, Natal, and Mauritius, and the Cape, Tasmanian, and New Zealand, by 24,000 miles of continuous cable, without landing upon the shore of any foreign country. The cost of this great undertaking is put down at about 4,000,000l., and it is suggested that the Imperial Government and the colonies should guarantee a contribution of 10 per cent. on that outlay. It is further proposed that this girdle round the earth should be hooked on to the present system of postal telegraphs,—an addition to his present labours which Mr. Sanderson might very fairly be expected to object to—at least until he has fully mastered what he has already undertaken.

The Opening of Kingston Bridge.—On Saturday, in the presence of the Mayor of London, the lord high steward of the manor (Lord St. Leonard), Sir John Thwaites, chairman of the Metropolitan Board of Works, the members of Parliament and magistrates for the county of Surrey, the mayor, and the rest of the municipal authorities, with many other persons of consideration, the bridge, in the Thames at Kingston was opened to the public free of toll, under the provisions of a recent Act of Parliament, by which part of the coal and wine dues levied by the Corporation of London is for a limited time to be applied to the gradual abolition of the tolls payable at the various suburban bridges on the Thames. Great preparations in the town and neighbourhood were made on the occasion, and the whole population for miles round turned out to witness the ceremony. Triumphant arches were erected in different parts of the town, and upon the bridge itself, which was also decked with evergreens and flowers.

Royal Italian Opera.—The Royal Italian Opera, Covent Garden, will open on the 25th, with *Maid of Honour*, in which the Titian, Mrs. Wachtel, Naudin, Mario, and Graziani, amongst its old acquaintances, and a number of promising new engagements. "Emeralda," the composition of Signor Campana, the libretto being founded on the romance of Victor Hugo; "Medea" (Jasón by Dr. Gutz, and Medea by Madlle. Titiello); and "Machabé" supported by Signor Graziani and Madlle. Titiens, are amongst the novelties promised. Signor Vianelli will be the chief conductor, the orchestra remaining nearly as before. A strong programme has issued from Drury-lane, and the Covent Garden directors will have to keep their eyes open to maintain supremacy.

Society for the Encouragement of the Fine Arts.—In the 10th inst. the second conversation of the season was held in Conduit-street, when, in addition to the attraction of the pictures in the gallery of the Society of Female Artists, there was an exhibition in an adjoining gallery of a considerable collection, amounting to upwards of 200 drawings and sketches of the late Mr. James Holland. After a short address by Mr. B. Solly, F.R.S., in which he paid tribute to the memory of the artist, a musical entertainment was given, under the direction of Mr. Alfred Gilbert.

Accidents.—A workman, while painting the exterior of No. 31, St. Paul's-churchyard, fell from a scaffold 40 ft. high, smashing his skull completely. He lay on the ground for some time before he was discovered, and he had obtained work on the job, and appeared to be in a state of great destitution. —The Roman Catholic chapel (St. Mango's), in Parson-street, Glasgow, has been on fire. The fire-brigade, however, extinguished the flames in a very short time. It appeared that the fire had originated in the boiler-room, which is on the ground flat of the building, and is used for raising steam to heat the chapel, while immediately above that is the wardrobe-room. The fire had smouldered for some time, and when the alarm first spread the chapel was filled with smoke. The floor of the wardrobe-room was burned, and the wardrobe destroyed, but fortunately the fire was confined to that apartment. The church is quite new.

The Projected State Railways in India.—In the House of Commons, the Under Secretary of State for India, in reply to Sir D. Wedderburn, said that the duty of constructing the railways would be entrusted to the Public Works Department; that there was no objection to being officers of the Engineer Corps referred to were incompetent; and that the Government of India had a heavy stake in the completion of the works in the best possible manner. Whether the materials would be transmitted through the Shore Department was not clear. In reply to Mr. Roden, Mr. Duff said that not more than 3½ millions would be expended in any one year. Up to the present time the Government had no information as to the amount proposed to be expended this year. What number of miles of railway the Government proposed to construct in India he could not say.

The Pollution of the Aven.—The Rivers Commissioners have had an interview with the Bath Local Board of Health upon this subject, a special meeting of the Board having been summoned for the purpose. The commissioners explained that the object of their visit to Bath was to inquire into the state of the river and the extent of the water supply, and expressed their readiness to receive information upon the subject. The Local Board intimated that they were willing to assist the commissioners in their inquiry, and instructed the city engineer to afford them all the assistance in his power.

The City Sewers Commission Report.—The report of Mr. Haywood, the engineer and surveyor to the City Sewers Commission, on the works executed during the past year, has been printed. Under the head of Improvements, various useful works, as widening streets, &c., are recorded as either done, partly done, or arranged for. The widening of the Poultry by setting back the front of St. Mildred's Church, is noted as agreed for with the ecclesiastical authorities. The negotiations for widening St. Paul's Churchyard, on the western front of the Cathedral were still in hand. Sewer houses in Three-King-court, Minorities, have been demolished as uninhabitable. The site for a mortuary to be erected by the Commission has been obtained.

More Discoveries of Roman Remains near Bath.—In the course of the excavations for the foundations of the new church in West Walcot, some Roman remains have been brought to light. In sinking for the tower, the workmen found on the north side a skeleton, and on the south side some calcined bones, what seemed to be the remains of a child, and the urn in which they were deposited. Beneath these, and at a depth of several feet below the surface, another skeleton, quite perfect, was exhumed, and near what will be the south wall of the church a piece of masonry was exposed to view, which seems to be the external wall of a Roman villa. A piece of stone cut in the shape of a triangle, probably an ornament of some kind, is also amongst the relics.

Popular Instruction at the Public Museums.—The Working Men's Club and Institute Union have, with permission of the authorities, arranged for a series of visits to the national museums on Saturday afternoons for the members of workmen's clubs. In each case the party will be under the guidance of some gentleman specially qualified to afford instruction in one particular branch of science and art. A party of fifty workmen were thus enabled to pay a visit to the Egyptian Department of the British Museum on Saturday, under the guidance of Mr. Samuel Sharpe.

A Granite Monument in Harrow Churchyard.—On the monuments recently erected in the churchyard of Harrow-on-the-Hill, the most remarkable is the large granite monument of the late Mr. Leighton's own. The three gables it was intended to decorate with painted foliage, though now it is thought more will be more durable; thus the work will be rendered either at the Vatican works in Rome or in Venice.

A Double Plough.—North-country farmers, who could not afford the expense of the steam-plough, have lately been turning their attention to ploughs drawn by a single team, and managed by one man, but turning over two furrows at a time. There have been two public trials, got up by the farmers of Cumberland, at Whitehaven and Asprey. No less than a dozen implements were submitted for competition, constructed by several different makers. Nearly all the work was done, and the success of the double plough was considered as established. The first prize was awarded to the lot of Messrs. Howard, of Bedford, for a light and simple implement carried on three wheels.

A Portable Motive Power for Machinery.—At the last exhibition of the American Institute, it seems, there was shown an elliptic lookstitch sewing-machine driven by an electric engine, which was fitted to a common lathe. As described to us, a series of eight magnets are set on the periphery of a circle, and around these revolves an armature of steel which is continuously propelled by the magnetic action, and thus operates the machinery that moves the needle. Connection with this motor is had by means of a small slide within reach of the operator, at whose will the current may be cut off entirely or the speed of the needle graduated as may be desired.

The Portsmouth Main Drainage.—Contract No. 1 with Mr. F. Furness has been completed to the entire satisfaction of the corporation, who have passed a vote of thanks to the contractor, and are preparing a testimonial to him by means of a small slide within reach of the operator, at whose will the current may be cut off entirely or the speed of the needle graduated as may be desired. The corporation believe that while the contractor has faithfully carried out his contract it has not financially been to him a very good undertaking. The No. 2 contract has been completed and settled up to the extent of £5,000. The sum total of the first contract is £4,728. Mr. Furness is about to carry out a large contract in connection with the cattle market at Chichester.

The Tewkesbury Water Supply.—The Cheltenham Waterworks Company decline to supply the town with water on the terms proposed. They say, "In reply, the company desire to remind the inhabitants of the heavy expense which the company have incurred in introducing an abundant supply of water in the borough of Tewkesbury, and the probable inadequate return for many years, at the rates proposed by the company, for the capital expended; and the committee regret that they cannot accede to the views expressed in the resolutions submitted to them."

Prevalence of Fever in Birmingham.—At the last weekly meeting of the Visiting and General Purposes Committee held at the Work-house, Mr. Bridge presiding, Mr. Walker, chairman of the No. 4 District Committee, drew the attention of the meeting to the prevalence of fever in several streets in that district, including Thomas-street, John-street, London 'Prentice-street, &c. The relieving officer informed him that the prevalence of fever in the lodging-houses in some of the streets he had just named. We are not at all surprised.

Science Schools at Rugby.—Recently we gave particulars and illustrations of the new laboratory at Riton. It may be useful to mention that Nature of March 10th, contains an interior view of the laboratory at Rugby, with particulars of the science schools generally, and a plan. These schools are part of an extensive block of new buildings erected from the designs of Mr. Butterfield.

A Useful Gift.—Mr. Joseph Pease has presented a steam fire-engine, worth 700l., to the town of Darlington.

Road Locomotives.—Mr. R. W. Thomson, C.E., of Edinburgh, has invented "a road steamer," which possesses the extraordinary power of not only running over any kind of road, whether hard or soft, whether muddy or slippery, but also of displacing with a road of any kind. It can run with facility over grass fields, ploughed fields, upon ice, through sand, and over frozen snow. It owes this facility to tires of vulcanized india-rubber on the wheels. The engine runs on three wheels—two large ones of great width, and a smaller one in front; and these wheels are surrounded by very thick bands of india-rubber, which are guarded by flexible shields, formed of open steel bar, to give it a "bite" upon the ground. The shields are removable, and are taken off when the road steamer has to pass over ice, snow, or sand. The performances of these iron elephants are really remarkable. One of them has run out from Edinburgh twelve miles, brought back a load, traversed the narrow streets of the old town while thronged with vehicles, turned all manner of sharp corners, and passed through the gates of a factory.

Institution of Naval Architects.—This institution will open its annual general meeting on Wednesday, the 6th of April, in the Lecture Theatre of the South Kensington Museum, which has been placed at the disposal of the members by the courtesy of the Committee of Council on Education. The remaining three days of the week the institution will meet as usual, through the permission of the Society of Arts, in their Great Hall, in John-street, Adelphi.

Burns's Hair.—The Globe Inn, Dumfries, which used to be frequented by the poet Burns, and which still contains the chair in which he used to sit, was last week offered for sale by public auction, at the upset price of 700l. There were no bidders, and the sale was adjourned for a fortnight. It is thought that it will be purchased before then by private bargain at a lower than the upset figure.

Improved Building Appliances.—Frost's Patent Sash-fastening cannot be opened from without, a considerable advantage. The improvement in Stanbury's Stench Trap consists in this, that the top or grating is attached to the bell by a hinge, so that although it may be raised to clean out the bell, a carcass scullery cannot readily enter it, and thus allow the house to be poisoned with sewer gas.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, March 7th, the adjourned discussion on the paper by Mr. E. P. Squyres, entitled "Farming Covenants," was resumed, and after a lengthy debate was again adjourned to March 21st. On that date, also, a paper will be read by Mr. J. Matthews, entitled "Notes for Culture in the Profession of a Surveyor."

The Surveyors to the Lavenham Highway Board.—At the last meeting of this board a motion was made that advertisements be issued for a surveyor, at 225s. a year. An amendment, however, that a resident surveyor at Lavenham, with a salary of 180s., and an assistant at Boxford with 120s., be advertised for was carried.

Removal of the Royal Mint.—In reply to Mr. J. B. Smith in the Commons, the Chancellor of the Exchequer said the Government hoped to mature a scheme by which the Mint would be removed rather more to the centre of the metropolis, and to dispose of the present site on Tower-hill to great advantage.

A Larger Organ than Ever.—The largest organ in the world, says the Musical Standard, will be the organ now building by Willis for the Hall of Arts and Sciences, South Kensington. "It will have 111 pipes, 10,000 notes, and 144 couples,—an absurd multiplication." Why absurd?

Diamonds.—Professor Tyndall has succeeded in igniting a diamond in oxygen by the concentrated rays of the electric light, according to the Academy. The professor has no doubt, it seems, of his ability to ignite the diamond by the invisible rays from the same source.

Fire in the Palace at Peking.—A wing of the Emperor's Palace in Peking has been burned, containing the imperial printing-office, with large stores of books and block-prints. The books printed at the Imperial press in the last two centuries have issued from this office.

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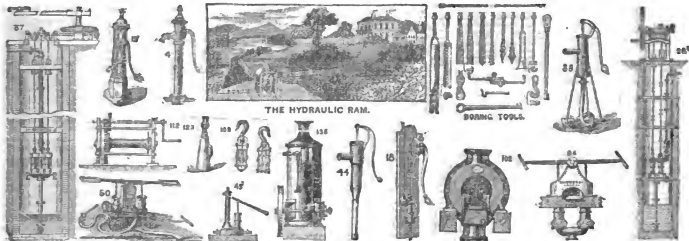
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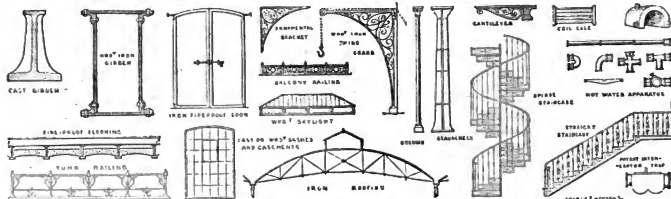
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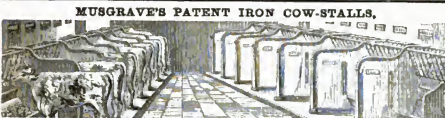
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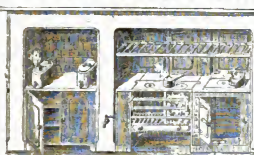
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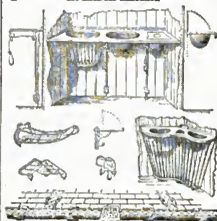
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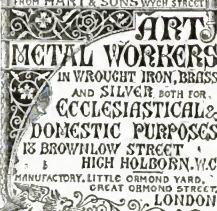
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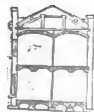
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VOL. XXVIII.—No. 1416.



*The Arts in the Middle Ages and in the Renaissance.**

N Paris, twenty years ago, a costly French work, in five quarto volumes, on the Middle Ages and the Renaissance, made its appearance, under the auspices of M. Lacroix, who was assisted in its production by several French writers and artists of reputation. From this handsome work the same author has recently selected the sections relating to the arts; and these he has published in one brilliantly illustrated quarto, under the title of "The Arts in the Middle Ages and at the Period of the Renaissance," which volume is now translated for the benefit of the English public. And a very attractive, well-stored, skillfully-prepared volume, thanks to Mr. James Defforne, the English public will find it to be.

The arts which M. Lacroix discusses in it are many. He divides them into twenty sections, which we will enumerate that our readers may judge at once of the comprehensiveness of the contents of his work. Beginning with furniture, he next treats of tapestry, then of ceramic art, arms and armour, carriages and saddlery, gold and silver work, horology, musical instruments, playing-cards, glass-painting, fresco-painting, painting on wood, canvas, &c., engraving, sculpture, architecture, parchment and paper, manuscripts, miniatures in manuscripts, bookbinding, till he arrives, finally, at printing. The order of this review of the arts is somewhat curious; but it is adopted, we presume, to bring into sequence those arts that have evolved into others, with their respective developments. The fact that the work was first published twenty years ago detracts only from its freshness. Views advanced in it, and information then furnished for the first time, have in the interval found very general acceptance. But they are none the less valuable on that account; and this new form will enable many to consider them to whom the five French quartos would be only as so many sealed vessels. In one instance, at least, an addition has been made to the original stock of facts, for among the illustrations is a reproduction of M. Viollet-le-Duc's representation of a nobleman's chamber in the fourteenth century, in his "Dictionnaire Mobilier," a work published subsequently to that of M. Lacroix. In another, however, a recent discovery that might well have been engrafted, has either been overlooked, or has not yet come to the knowledge of the author. We allude to the unravelling of the secret of the seat and source of the scarce Oiron filence, mentioned by M. Bury in his work on the "Chef-d'œuvre of the Industrial Arts," and detailed in

these columns in our notice of Mr. Chaffers's translation of that work. But, take it "all in all," the merits outweigh drawbacks; and those wistful of a dignified introduction to the circle of the industrial arts will do well to avail themselves of M. Lacroix's presentation.

The fourth century is fixed upon as the commencement of the period to be illustrated. Relics of this date are scarce; which fact is not so surprising as that there are any at all, perhaps; though we are apt to consider that we ought to account for it, when we remember the comparative profusion of Greek and Roman remains of an earlier time. The miniatures, too, in manuscripts, that furnish us with so many examples of ancient forms in furniture further on, are still scarcer at this date, two or three only being in existence. In the item of chairs, for instance, it is difficult to cite many specimens before the days of Charlemagne. St. Eloi, the celebrated bishop and worker in metals, is recorded to have manufactured two gold state chairs for Clovis, and a gold throne for Dagobert. This last is supposed to be identical with the curule chair, called the Fontenil de Dagobert, in gilt bronze, now in the Musée des Souverains, which was originally a folding-seat, to which the Abbé Sager, in the twelfth century, added a back and arms. M. Lacroix gives an illustration of it. For a second early example, he is driven to a miniature of the ninth or tenth century. In tables, there is the same dearth. Miniatures of the last-mentioned date are the earliest authority. But the first example in the work before us shows the round table of King Arctur of Brittany, from one of the fourteenth century, preserved in the Imperial Library, Paris. This table is not round, in our acceptance of the term; for though of a circular circumference, it has a circular space in the centre, in which the pages stood and waited upon the guests; and for access to this centre there was, necessarily, a passageway left in the circumference. The seats surrounding it appear to be fixtures, divided only from one another by elbow-pieces. Eleven figures are seated at the banquet represented, of whom five wear crowns, and a sixth has some ornamentation round his neck that looks exceedingly like another. Notwithstanding this display of regal magnificence, a knife each is the only accommodation provided with which to partake of the meal; and the presence of two groups of one which is gnawing a bone, is another suggestive indication of rough manners. In kitchen contrivances and implements, too, there is a scarcity till we come to the thirteenth century. Nevertheless, with selections from examples of this and succeeding centuries, and notes of casual mention of articles of furniture by the early historians, poets, and romancers, a goodly group of facts is got together.

The chapter on tapestry is well written and well illustrated. The association of this art with dames of the highest rank in all ages, gives it an additional interest. M. Lacroix brings forward instances in which the production of tapestry and embroidered hangings was also carried on in ecclesiastical establishments, for the decoration of the churches attached to them. But here, again, though we know that from the days of Minerva, downwards, the heroines of Homer and Roman ladies employed themselves on this work, the earliest specimens presented for our examination are three portions of the Bayeux tapestry, traditionally supposed to be the production of Queen Matilda, wife of William the Conqueror. The credit of this piece of workmanship,—which, though only 19 in. in height, is scarcely less, it will be remembered, than 212 ft. in length, and contains 530 figures,—is, however, transferred in the account of it to Lervet, one of the queen's female embroiderers. We have a strong impression ourselves, founded on internal evidence, that the borders, at any rate, are not the work of women. Two

specimens of fifteenth-century work, one from Berne and the other from Beauvais, are given with much brilliancy of colour, and an indentation of paper that produces an excellent representation of needlework. We quote a short passage from the historian of the monastery of St. Florent, at Saumur, which shows that tapestry, in the tenth century, was looked upon in the same light as painting and sculpture as a means of the internal decoration of churches:—"In the time of the abbot Robert III. the vestry of the cloister was further enriched by magnificent paintings and pieces of sculpture, accompanied by legends in verse. The above-mentioned abbot, who was passionately devoted to similar works, sought for and purchased a considerable quantity of magnificent ornaments, embroidered with various devices. Among other objects he caused to be made two pieces of tapestry, of large size and admirable quality, representing elephants; and these two pieces were joined together with a rare kind of silk by hired workers in tapestry. He also ordered two dornestris in wool to be manufactured." English embroiderers, we must add, occupied a high place in those days, and great store was set by *opus Anglicanum*.

We pass over the chapters on ceramic art, armour, and saddlery,—not because they are less attractively written than those we are about to speak of more especially, but merely on account of the impossibility of noticing all. Those interested in the subjects we omit will be charmed with the care taken in the treatment of them, and with the profusion of examples with which they are illustrated. We turn to the account of works in silver and gold, because at the present day these are occupying a conspicuous rank in English endeavours to keep pace, if not to keep a-head, of European progress. The modern goldsmith is, or should be, an artist. Hear what his predecessor was in Medieval times. The monk Theophilus, whose Latin treatise on the industrial arts of the twelfth century shows us so many pictures of art-workmen in the days of old, tells us that a goldsmith was a modeller, sculptor, smelter, enameller, jewel-mounter, and inlay-worker, or an expert in arts now divided into six distinct occupations. "He had to cast his own models in wax, as well as to labour with his hammer, or embellish with his own graver; he had to make the chalice, the vase, and the pyx, for the metropolitan churches, on which were lavished all the resources of art; and to produce, by the ordinary process of punching, the open-work, or the designs of copper, intended to ornament the books of the poor." The goldsmiths of yore had both the patronage and the opposition of the church. Whilst one set of ecclesiastics spent all their oratory in tirades against luxury and riches of every description, another beautified the services with the greatest wealth they could accumulate. Though St. Boniface said bitterly and reproachfully, "Once golden priests used wooden chalices, now, on the contrary, wooden priests use golden chalices," there were abbots, who, like Abbot Sager, of St. Denis, patronised the craftsmen who produced the golden chalices, and protected the more ornamental of the industrial arts till they were past all danger of being extinguished by disregard. St. Eloi, the bishop and goldsmith, who was prime-minister to Dagobert I., whilst he worked incessantly for him, "assisted by his servant Thillon," at the production of gold vessels, enriched with precious stones, laid the foundation for the esteem in which the art was held in subsequent centuries. He decreed that goldsmiths should be of two orders,—religious and secular; so that objects destined for the church should not be made by the same hands that formed those intended only for worldly purposes. The greatest integrity was called for, and generally speaking practised by the craft; for the material in which they wrought was required to be of a legal and authenticated value; and all attempts

* "The Arts in the Middle Ages, and at the Period of the Renaissance." By Paul Lacroix. Illustrated with nineteen chromolithographic prints by F. Kellerhorst, and upwards of four hundred engravings on wood. London: Chapman & Hall, 1870.

And the monks copied and copied with Christian zeal. Those who could not write occupying themselves with binding. Only middle-aged men, trustworthy and careful, were approved as scribes of the Gospels. Peiler, and Mismal, for fear of verbal errors; and the greatest of the great consisted copying a privilege. Charlemagne copied Origen's work, and introduced as he wrote, his genius cropping out even in this particular, those useful signs, the comma and full-stop. Religious sentiment and writing were so blended that saying took wing, "To write like an angel!" The different characters used, shown in fac-similes from pale and precious manuscripts, cover eight pages. We must pass on to the miniatures with which some of them are adorned. As we have said, those previous to the eighth century are exceedingly rare. One is shown from the Virgil in the library of the Vatican, of the third or fourth century; another Virgil, presented to the pope, constitutes probably the only other specimen of this early date. The capital letters only were embellished by calligraphy in the sixth and seventh centuries.

In the eighth and ninth centuries these were painted, and formed of combinations of birds, fishes, beasts, and foliage. The book of the Gospels, said to have belonged to Charlemagne, now in the library of the Louvre, furnishes the first attractive miniature; and the Commentaries of Gregory Nazianzen the second, wherein is represented the consecration of a bishop. As well as good examples, the writer has shown one here and there, but they are in bad company. A lodging-felling colony are squatted down here, and their other certificates of authority are nailed like "Notices to Quit" on their door. These numerals tell of the number of cubic feet of air within, but they are silent about its density. As they comply with the local Act as to space, they stand upon their right to drive a coach and six through the classroom. But hold! They are pressed, and they are struggling hard for a living. Why does not the Corporation help them to ply their calling with decency, by keeping their neighbourhood clean?

We wind round by Lady's Well, and its houses are on a par with the last-named. Here, in an angle, added into the churchyard wall, a fountain, like the one in the chapel, is the focus of inspiration, however, is dry here. Nothing wells forth, as far as we can see. An inscription above tells us, in pretentious wording, that "The Lady's Well" was erected, in pursuance of the request of the citizens of Glasgow, in 1833. How long its waters contributed to their health we are not told, but this we know, that the angle of a churchyard wall, above which rise several feet of dripping clay, and over which peep sundry and several tombstones, was not a very meet spot for a public fountain. The old rivulet that sweeps between the High Kirk and the Necropolis dashes its muddy waters onward, sullied by mowers and herders, and cooling in its course many silly and sluggish swimmers, reeking with filth. No improvement is discernible here; not a bit. The sides of this streamlet, which could be embanked, are jagged, broken, and loathsome to the sight. It could be made a pleasure to look upon; but far better that the running stream should be now covered over by the waters under the Gallowgate, and finally empty itself in the Clyde.

Not far off from the quarters we have been describing we examined some houses in course of construction. They are on a par with the improved dwellings we have already described in the beginning of this article.

Some of the flats are apportioned into six rooms; a room and kitchen for each separate family, with a water-closet for the use of every three families. Some of the flats here have a one-room accommodation for families, with the usual partitioned niche in the corner for the bed. The character of the carpentry or joiners' work of these four or five story flats needs no description. It might have been executed by an amateur casual. The mason and the plasterer do the principal work, and when the sashes are hung, the doors hinged, and the painter has put on the priming, the flats are ready for their victims. Ere their final finishing, their first tenant often pays nature's debt and the poor-rate together.

Some of the "flats" are apportioned into working and middling classes of Glasgow is a number of self-contained houses—houses built to accommodate one or two families at most. There should at least be three rooms for each family, two rooms and a kitchen, with washhouse, privy, ashpit, and so on. These could be cheaply built in or about the kirk, and the material might be either brick or concrete.

For building with the latter material Glasgow affords rare facilities because of the number of its foundries and iron works, which have any amount of waste in the form of calined sider or shingle. It is as hard as granite, and admirably adapted for the support of concrete dwellings. We are told the kirk, and would be glad to see the waste of smelting-houses and furnaces utilized for some good end.

Improved dwellings for the poor are a necessity, and they will have to be erected if Glasgow wishes to escape a serious epidemic some day or other.

GLASGOW, SANITARY AND SOCIAL: A GLANCE.*

RESUMING our observations, we would particularly direct the attention of the civic authorities of Glasgow to another noted but neglected quarter of the town. Drygate is well known by name. The Necropolis overlooks it, and there is a cold, damp sweat upon its tiles and pavements. Verily this quarter is on its way to the sepulchre, and a funeral mass is in the voice of its inhabitants. The Drygate is rather a damp gate, and were it not for its long undulating base, which accelerates its drainage, Drygate would be a wet place indeed. A bad road and footpaths are here; houses are propped, and the property does not seem to be very valuable. Yet there are good houses about, but they are in bad company. A lodging-felling colony are squatted down here, and their other certificates of authority are nailed like "Notices to Quit" on their door. These numerals tell of the number of cubic feet of air within, but they are silent about its density. As they comply with the local Act as to space, they stand upon their right to drive a coach and six through the classroom. But hold! They are pressed, and they are struggling hard for a living. Why does not the Corporation help them to ply their calling with decency, by keeping their neighbourhood clean?

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* See p. 218, ante.

No excuse at all can exist for not having a thorough system of drainage in operation in Glasgow. No engineering difficulty exists to prevent the accomplishment of that and the continuation of a perfect and uninterfered water supply. The city railways are pushing forward, and it will not be very long before they are connected at both sides of the river, with all the existing lines. A central station will be in Dunlop-street, on the site of the old Theatre Royal; and the old Glasgow University, in the University of Glasgow, will be a new and better supply. The new bridge at the Jail-square, leading from the Saltmarket to the north side, has not progressed much as yet. The abutment pier, on the north side, is in course of erection. The removal of the old bridge occupied considerable time. A temporary one of timber supplies the place of the demolished bridge. A little lower down the river, the Union Railway crosses the Clyde. It is an iron lattice bridge, supported on six pairs of columns, the lower half being iron, the upper half granite. There is little beauty about the design, but it is constructed sufficiently strong to serve its useful purpose.

"Paddy's Market," a series of clothes-stalls that formerly occupied the east side of the square, and opposite to the Jail-square, is now upon the square, or, rather, should we say, it is on a portion of Glasgow-green. A wooden enclosure, within which are sheds with a number of central and side stalls, now constitutes the famous "Paddy's Market." Here may be seen for sale, in the most casual manner, the goods of the British and Continental public. The man who, short of cash and circumscribed in income, could not pick up a second-hand suit here, "quite as good as new," must be hard to please. Here are pants, knickerbockers, knee breeches, mules, corduroys, tweeds, black cloth, blue and grey, and every variety of every shape, and, and, and, and, for coats, there are bitumens, kerseymeres, Irish frieze, Meltons, alpaca, Highland plaid, shooting, fishing, walking, riding, eating, and drinking coats,—and last, though not least, some of the identical swallow-tail pattern, with brass buttons, which the immortal Paddy himself is said to have worn on the memorable occasion "when he took it off" and dragged it through Donnybrook fair, during the dastardly Sassenach to tread on the tail of Paddy's Market in Glasgow is a study. Petticoat-lane in London is noways like it. It stands alone, unequalled and unexceeded, as a rendezvous for the pawed, plumed, and cut-off regiments of the world.

We are almost tempted to say that, after a careful consideration of the sights and scenes we witnessed in many parts of Glasgow, it out-herods all other cities and towns in Great Britain for the terrible site of chronic and eternal drunkenness. Liverpool is the only English town where the cause of the approach, comparatively speaking, with Glasgow. You can scarcely pass at night through the High-street or the Saltmarket, or even Argyle-street or the Cross, without being stumbled against by a drunken man or a raving woman, whom drink has transformed into a maniac. It would be difficult to decide, of the two causes of the labouring population of Glasgow, which, whether the low Scotch element or the low Irish element, is the worst. The former drinks more to himself,—muddles more; the latter is gregarious, and he likes a little excitement, call it noise or fun if you will.

To the most unimpaired observer a look into the most unimpaired working population in the low quarters of Glasgow will exhibit the effects of the evil we are describing. Pallid, pinched, and cadaverous looks, bent forms, sunken eyes, a trembling gait, an absence of all manly spirit and animation,—this is a true picture of what may be read in the faces of many of the working folk and women of Glasgow, who are as wretched as it is nowise overdrawn; it is a real, not an ideal, picture; and we would wish, for various reasons, we could honestly say otherwise.

We will adduce an instance in corroboration of what we write about the drunkenness of Glasgow. We have it from a police official. From one case of drunkenness, we know that there were upwards of 177, paid in fines in police-court cases; and perhaps we overstate the fact if we say that in this particular court there are twenty families. Think of what 177 might have done for the well-being of these wretched families, husbands, and wives, and children. It is bad enough to know that a great deal of the bad and wretched homes are often the cause of driving men into the public-

Art-Union of London.—It will be seen from our advertising columns that the subscription-list of the Art-Union closes on Thursday next.

house for the sake of company, and temporary heat and comfort? Few like to sit down in narrow, darksome rooms, amid squalling infants and often aqualid misery, while the price of the pot of ale or glass of whiskey can be squeezed out of the weekly board. There are some of our working men who will satisfy the craving for drink, though they should run the risk of feeling the pangs of hunger.

Improve their dwellings, say we; build them homes fit to live in, give them proper breathing spaces, and a plentiful supply of pure water and pure air, and we venture to say the number of drunkards will be less.

Confining our remarks to Glasgow, and looking upon its present state, one is almost tempted to say that the institution of a number of hospitals for the reclamation and cure of drunkards would be a very advisable undertaking. With all her temperance societies, temperance hotels, and temperance lectures, Glasgow, as we have already said in other words, is the most temperate city and town in the Kingdom.

A few words now about what more intimately concerns our constituency. Glasgow is growing rapidly within as well as without. Home-building is going on; the University is being erected; and public works as well as private are being projected. Capital and labour are again in contact, and as the demand for the former, which the workman is seizing his opportunity, and turning to his advantage for the moment. The employer has his hands full, and so much work has to be executed in Glasgow this year, that something must be sacrificed on the score of expediency. The ship-building business on the Clyde is pretty brisk, and there is always something to be done in this line of the river.

In our rapid survey of Glasgow, sanitary and social, we have endeavoured to note faithfully what we saw and observed, as well as what we had already known by experience. In corroboration of our remarks, the criminal statistics of Glasgow will tell a social tale in sad and unerring figures. By these social data Glasgow's sanitary state is illustrated; and we bring here our few sparks of light to make the picture stronger, and to hasten, if it may be, the efforts that should be attempted to reverse it. "Let Glasgow flourish." But that she may do so, Glasgow must be cleansed.

Glasgow at this moment is bearing the criminal burden of about 70 professional thieves, in addition to those of her own indigenous population, who ply that trade whenever and wherever they can. This datum we have from an official of the detective department. The law that is in force in England, which gives power to arrest suspects who are known to profit the street calling, and to question them as to their modes of life and labour, does not apply to Scotland at present. The consequence is, that an exodus of the thieving fraternity has taken place from the sister kingdom, and thieves ply their trade here with impunity so long as they are undetected, though known to the police as well-known and notorious evildoers. Add to these facts the number of 30,000 who get drunk, or go to bed drunk, every Saturday night in Glasgow, and we have an appalling statement of the social and sanitary condition of the great commercial city on the banks of the Clyde. The death-rate of the city has swelled to such enormous proportions that a panic is beginning to seize on the mind of the sober-minded citizens, and has spurred them at last to the necessity of public meetings to draw attention to, and to take steps to remedy, this terrible evil.

PROFESSOR SCOTT ON ARCHITECTURE, AT THE ROYAL ACADEMY.

LECTURE III.*

My last lecture brought the subject of vaulting to its full functional development,—that which contains all elements of utility, and is traced to the demands of utility, but none which have been introduced purely for decorative purposes. In my present lecture I must supplement what I then treated of with some cases of its application which I had not then time to detail, and then proceed to carry on my subject into its more distinctly decorative developments.

Before, however, I proceed further, it may be advantageous—though construction does not, perhaps, come within the range of lectures in this Academy, excepting so far as it exercises an influence upon form—to say a few words on cer-

tain practical points which are necessary to the full understanding, even of the artistic portion of the subject we are considering.

In the earlier forms of vaulting, the entire strength lay in the continuous arched surface, which was constructed of brick or of stone, or of rubble bonded at intervals with brick or stone, the rubble or stone being of the cellular material called *opus reticulatum*, which was much used by the early builders on account of its lightness as well as the tenacity with which it united itself to the cement.

Transverse ribs were next introduced at intervals to strengthen the wider spaces; and, in the earlier period, the angles were similarly fortified.

These ribs, in early examples, sprang distinctly as separate arches from the impost, the vaulting passing over them. At a later period—even in round-arched vaulting—we find the practice coming into vogue of uniting the ribs, and even the springers of the vaulting itself by cutting them at the base into the same block of stone. We see an early specimen of this in St. Bartholomew's Church.

When the ribs became more numerous it often occurred that five or even eight of them had to spring from one group of capitals; and at times three at least (and subsequently more) from a single capital. It is not, however, the same block of three or more distinct forms could scarcely retain their separate existence, but that they must be united in their lower portions in a single block, and that their forms would, more or less, die one into another. Though we can trace this process in Norman work, it was not completely established till the time of the thirteenth century.

It will be better understood by means of a figure, in which a transverse rib, two diagonal ribs, and two wall ribs meet at their common springing line, and so intersect and unite one with another as to produce a section at the base composed of portions of them. At the base, therefore, the springing of ribs will be at once shown that their common and united form must extend to some considerable height above the springing; and so far as it reaches, which is often some 8 ft. or 10 ft. in height, they cannot possess an individual existence. To this height, then, it is customary to build the group of ribs in horizontal courses, and only to complete the vaulting arch by the same block of clear themselves one from another, which usually occurs at one level, though in vaults of great irregularity one rib often clears itself at a lower level than another.

In setting out the relative position of the ribs upon the common springing level, great skill and judgment are required; or they will clear themselves one of another so irregularly as to cause great difficulty and needless twisting in the filling in of the vaulting surface. If you set out on plan the side lines of two ribs, and lay down the true position of the moldings of one of them, it is clear that, if the curvature of both were equal, the second rib must be set out with its back line at an equal distance from the points at which the plane of the adjoining lines would intersect; for, in following the curve, both would at a given height reach a point vertically over that intersection, and so the filling in would have a proper starting-point, which would not be the case if they reached that vertical line at different heights. As, however, the diagonal rib (where the ridges are level) has to travel farther to reach a given height, its springing section has to be set further back to make it reach the vertical line over the point of intersection at an equal level with the transverse rib. The wall rib in a square vault would be similarly placed with the diagonal rib; but in an oblong vault, as it would travel a less distance to reach a given level, its springing section must be placed forwarder than that of the transverse rib, and, of course, greatly forwarder than the diagonal. This is easily adjusted by drawing the curve of the back of the rib, and then the first intersection of the drawing against the vertical line of its intersection with the next rib, and then, from the apex point of the adjoining rib, to draw its curve through the point of intersection, which will give on the springing line the distance backward or forward at which the springing section of that rib should be placed.

The ribs of all vaulting of early date are square and flat at the back; the vaulting, which is often very thick, passing over and resting upon their backs. In later works the ribs were usually deeper from intrados to extrados, and were notched, or as it is technically called, "rebated,"

to receive the vaulting, or at least the lower part of its thickness; for where the surface was not intended to be plastered, the wrought stone was often a thin casing covered over above by a thicker mass of rough work. The curvature of the courses of wrought stone enabled them to be set without the use of continuous timber centering, and this latter, being, as we find, would itself form a substantial centering for the outer rough vault.

At a later period this outer thickness was dispensed with as a superfluous load. In all cases the hollow space against the wall behind was filled in up to a certain height to strengthen the haunches of the vault, and being, as we find, would itself form a substantial centering for the outer rough vault.

The ribs were almost beautifully moulded, and sometimes decorated with carving. In early works, as at St. Cross, St. Peter's, Oxford, St. Joseph's Chapel at Glastonbury, and in the aisles at Canterbury, the old Norman chevrons were continued in the ribs. The meetings and intersections of the ribs at their apex were usually ornamented with bosses, and being, as we find, These bosses assumed many varieties of form—sometimes a small rosette, or a little tuft of foliage, merely to decorate the centre of the intersection without covering the moldings; sometimes the moldings themselves return round a central opening, with or without foliage; sometimes a little tuft of foliage, and being, as we find, the last-named form in each angle, nearly at the plane of vaulting; sometimes beneath such moulded boss a disk was attached with or without foliage, as if to form a cover to the central opening; indeed, it was occasionally actually the movable cover of such an opening. In English mode appears to throw it more equally covering the intersection, and frequently containing figure sculpture. Westminster Abbey furnishes admirable examples both of the foliated and sculptured bosses of which I exhibit some casts.

As regards the intermediate surfaces of the vaulting, a curious difference is found to obtain between the methods adopted in France and in England.

In France the courses of stone run parallel to the ridges, as would naturally suggest itself from the original intersecting vaults; while in England they take an irregular direction, as if suggested by placing them at right angles to an imaginary centre line of each triangular space, thus forming a series of ribs deviating much and irregularly from such a rule.

The French seem much offended by the appearance of the English system; and I remember feeling in the same way when I first saw the French method. The latter seems to throw undue pressure on the diagonal ribs, while the English mode appears to throw it more equally on all the ribs, throwing it, in fact, down into the direction of their meeting point.

I will now describe a form of vaulting which, though it originated during the round-arched period, seems more properly to belong to that now under consideration. We have seen that the arches of churches were frequently arranged in pairs; the piers alternating in size and design. Supposing each arch to be about half the width of the nave, each pair of arches would form a square on the plan; and, though each a square space may be, and often was, divided into two oblongs in the vaulting, it is equally natural to vault it as a single square. As, however, this leaves the alternate piers unprotected in the vaulting, it became frequent to carry across from this intermediate pier a single transverse rib crossing the diagonals at their point of intersection, and between it and those diagonals to introduce oblique vaulting cells, whose ridges strike from the centres of the half-bays to the point of intersection of the diagonals.

Dr. Whewell, followed by Professor Willis, has given this the name of "*separite*" vaulting, ordinary vaulting being quadripartite, as having four cells. It is obvious that, in a square building of two bays on each of its sides, this may be carried out on all four sides, and thus become octopartite; or, as in the case of Lincoln Cathedral, it may be adopted on one side only, and so be *quinqupartite*.

These forms of vaulting were most frequent during the transitional period; that is to say, during the latter part of the twelfth century. Thus it is used in the work of William of Sens, at Canterbury, and by Bishop Hugh of Lincoln, and probably more made it at St. David's. It was, however, continued at Lincoln in the great transept, and in the aisles of the nave, which are of later date; and we have a beautiful instance of it at Westminster, as late as 1250, in the Chapel of St. Faith.

* See p. 234, ante.

The same principle was applied, in a varied form, at the east end of the Priory Church at Tynemouth, where, though the bays have ordinary vaulting, the eastern wall is divided into three parts, corresponding with the windows, over which cells of vaulting are formed, converging to the intersecting point of the compartment.

Curiously enough, we find the same arrangement repeated a century and a quarter later in the crypt of St. Stephen's Chapel, in the Palace of Westminster.

In the Lady Chapel at Annerley the same idea is carried out still further, the vaulting, square in plan, having two of its sides divided into two cells each, as on the separtite principle, and the other two into three each, as those above referred to, making in all a decapartite vault. If all the sides had the threefold division, it would have become dodecapartite, or a vault of twelve cells.

M. Viollet Le Duc gives a curious instance of separtite or septipartite vaulting united with another form, for which I know no definite name, but which is itself a union of the groined vault with what I have elsewhere called the square dome.

I will describe the last-named vault by a comparison between those of two corresponding chapels near the west end of Lincoln Cathedral, to the right and left of the nave.

The two chapels are alike in plan,—an oblong, each side of which is divided into two arches. The stiffer side is the one towards the choir, and the other has none. The one is simply divided into four groined vaults on the most customary principle. The other is similarly vaulted up to the line of the square, the angles of which would be represented by the four bosses of the first-named vault; but from thence the square ribs, instead of running downwards, on to a central pillar, continue to the vault, till they meet in the middle point of the chapel. This upper portion, therefore, is the top of a square dome; and the whole vault may be described as a square dome penetrated on each side by two Welsh groined cross-vaults. This combination is common in the vaulting of the central towers, as at Lincoln and York; though in these cases the central portion is bounded by a strongly-marked horizontal line defining the boundary of the half-groins below, and the square dome above. In the chapel I have been describing there is no such boundary line, but the groining compartment continues till they meet in a point at the top. This system may be carried out with any number of bays; and we have in the chapter-house at York an instance of its application to an octagon. The plan of the vaulting there is identical with that of Westminster or Salisbury, but the portion enclosed within the inner octagon, instead of turning down to the central pillar, runs up to the point at which all the arched lines would meet in the centre.

The relation between the vaulting of the chapter-houses of York and Westminster is, in fact, the same as that between the two chapels at Lincoln just described. In each case we see how similar forms may be covered over with vaulting nearly identical in plan—with or without a central pillar at pleasure.

There is a parallel case in the crypt of Glasgow Cathedral, in which the compartment is divided on three of its sides into two, and on the other into three arches.

This crypt is a work in which the architect would appear to have revelled in self-sought perplexities, and to have sought them, one after another, with singular success.

The portion of the crypt which represents the choir overhead is really one of the most lively and amusing pieces of vaulting I know. It consists of ten bays; and, as the east end is necessarily divided into two bays for the support of the choir above, neither of which could be cut off as a space two bays long, then a second of three bays long, then a single bay, then another space of three bays; and, finally a single bay at the west end; while to each of his groups of three bays, he gave a central column, and repeated the three-fold division on its east and west sides. The square spaces, then, each of whose sides is divided into three, become the key-notes of his scheme, and most ingeniously and beautifully

he vaulted them. The principle followed is really, however, nothing more than an adaptation of the ordinary mode of dividing a square into four smaller squares of groining to a space whose sides are divided into three unequal parts. The central square resting on the columns remains unaltered, but the sides have each three cells, the transverse ribs from the central column being bifurcated as its apex, and instead of going across to an opposite pillar, spreading, right and left, to the two pillars; and while the main diagonal ribs remain unaltered, these are met at their apex by half-diagonals coming obliquely from the same pillars in the sides. The result is a star-like arrangement of an exceedingly pleasing, though at first sight intricate character.

Adjoining one of these beautiful squares comes the compartment first alluded to. It is a very peculiar design, that last described. On three sides it is the same as the Lincoln Chapel, with a portion of a square dome instead of a central column (excepting only that this has the boundary line), while the fourth side, having three divisions instead of two, is dealt with precisely as has been described in the preceding case. The central square compartment is divided into alternated single bays, each divided transversely into three squares of ordinary groining; and the perplexity of the effect of the crypt arises not so much from the difficulty of any of the forms of vaulting, as from the constant change from one form to another, no two adjoining divisions being of the same whole is carried out in every detail, and forms a most beautiful and interesting interior.

The subject of puzzles in vaulting suggests a notice of that of the choir at Lincoln, where the architect (De Noyes) seems to have put himself out of the way to make an easy matter difficult; for, instead of groining the oblong bays in the usual way, he has made each cell strike obliquely to points dividing the central ridge of the bay into three equal parts; so that neither the cells nor the diagonal ribs from either side ever meet one another, but each cell is met by an intermediate or an oblique transverse rib from the opposite side. Professor Willis, in his popular lecture there in 1848, called the architect "a crazy Frenchman," it being then thought that he had been brought over by Bishop Hugh of Burgundy; but it has since been discovered that he was a member of a Norman family long settled in Lincolnshire; and the beauty of his work is such that we may well excuse this freak of his consistency, and wish that the form of craziness was more prevalent amongst ourselves!

A curious effect is produced by carrying vaulting out accurately in a circular aisle or corridor, where it gives the diagonal ribs a twisted line, bending them out of the vertical position seen in the circular aisle of the Cathedral at Bourges, both in the church itself and the crypt.

I will only notice two or three more varieties of this stage of vaulting, and those of a miscellaneous character.

The chapter-house at Lichfield is an elongated octagon, one of its sides on either hand being double the length of the others, and divided into two bays. The vaulting is a curious elongation of that of the regular octagonal chapter-house; a cell on either hand being interpolated, and the ribs all converging obliquely to the central pillar.

At Caudebec, in Normandy, we have, though of much later date, a hexagon vaulted much as our own chapter-houses, but with a pendant substituted for the central pillar, and ingeniously suspended by a long stone from a constructional vault above.

At Durham, in the octagonal kitchen of the monastery, we have a curious piece of vaulting seen in view to a certain extent in the eastern. The ribs run from every corner at right angles to the side of the octagon, and consequently meet the third angle from that from which they set out, and their intersections leave an octagonal opening equal in diameter to this side of the original octagon in the centre, and this is strong enough to support the required vault above.

The vaulting of the Lady Chapel at Salisbury is remarkable for the extraordinary slenderness of the columns which support it, being this Purbeck marble shafts of great height, reducing the width of the chapel by cutting off a very narrow range of vaulting, and the key-note of the crypt beneath the Sainte C. Chapelle at Paris,

where, to avoid the segmental vaulting which would be the natural result of its limited height, the span is reduced by a range on either side of small pillars,—in this case so near the wall as to necessitate a great amount of stibbing, and the introduction of a kind of tracery beneath the transverse ribs to give abutment to the central vault.

I should, in passing, mention that segmental vaulting is very frequent at this period, where the height is limited; and that, even where the main arches are great, so the diagonals are frequently assumed that form; indeed, it became necessary wherever the length of a diagonal exceeded double the height of its arch.

Taking this stage of the history of vaulting as a whole, we have peculiarly favourable opportunities of studying it here in London; possessing, as we do, excellent examples of all its most leading varieties.

In the Temple Church we have the curious circular aisle already described, being a specimen of the earliest era of true pointed-arch vaulting; while in the eastern portion, dating some forty or fifty years later, we have the most typical specimen conceivable of vaulting, all springing from a single point, and with the ridges. It is rendered the more marked in character by the division of the three ranges of vaulting by means of the pier-arches, which, coming close under the vaulting, assume the character of enlarged ribs.

Very similar to the last-named is the vaulting of the Lady Chapel of Westminster, St. Mary Overie's, Southwark. The only striking difference being the number of spans and the absence of pier-arches, so that it assumes the form of a space divided into twelve equal and square compartments, and carried by six similar columns.

In the choir of the same church we have an excellent specimen of the vaulting of the oblong compartments and stilted side-cells, worked in a manner somewhat different from the usual ploughshare system.

In the eastern half of Westminster Abbey, including the transepts, we have the vaulting of the oblong space (with ploughshare side cells), and of the square space, and of the fourfold space of all degrees of irregularity; we have spaces of two dimensions, viz., the great space of the Sanctuary and those of the radiating chapels, which are as beautiful specimens of the apex vault as can be found; we have, in the Chapter House, the vaulted octagon, with central pillar carried out in noble proportions and with excellent stibbing; while in the crypt below it we find the same vaulting, of depressed proportions, and carried out with the severest simplicity.

We have in its inner vestibule two oblong vaults placed side by side, one apparently the square, and the other of the carrowest proportions; and in the outer vestibule beautiful miniature vaulting, on minute columns, and with the segmental arch; while in St. Faith's Chapel, hard by, we have an excellent example of the separtite vault. Parts of the aisles, too, are remarkable for the subdivision of their bays by transverse arches of the double orders of mouldings, giving a great nobleness and strength to their effect; and all these varieties are carried out with admirable detail and studied art.

It would lead me into too great length if I were to go into the moulding of the ribs; their combinations where grouping and intersecting one another in the springers, and the mode in which the shafts are arranged for their support. My illustrations will, however, do me no injustice in this, I must in the crypt below to mention that in French buildings, and frequently in the earlier English specimens, the plans of the abut of these shafts assume both forms and positions indicating the general section and the directions of the ribs they carry, and that this is even shared by the bases; showing that the vaulting was the very first thing to be designed, and that, from the very floor of the building, it influenced the general design. This was lost in England by the introduction of the circular abacus.*

New Market Hall for Angley.—It has been resolved at a numerous meeting of tradesmen and other residents that a new market-hall should be erected. A committee, comprising the members of the Local Board, parish officers, and the chairman of the meeting, was appointed to promote and carry out the object of the meeting.

* To be continued.

SURFACE DECORATION.

A PAPER on this subject was read by Mr. William Pittman at the Society of Arts on the 14th inst., and was illustrated with a large number of decorations of various sorts lent by manufacturers and others. These included specimens of old leather hangings from Mr. George, brocades and embossed gold papers from Messrs. Corbier & Son, other specimens of brocades from Messrs. Walters & Son, painted decorations by Mr. Earle, parquet floors from Messrs. Arrowsmith, painted floor papers from Messrs. Scott, Clutterbuck, & Co., good stencil-patterns by Mr. Pittman, French cariatide papers from Mr. Pearce, and imitation leather hangings from Messrs. Woolmans & Co.

In the course of the discussion which followed the paper,

Mr. Hyde Clarke commented on an observation made by Mr. Pittman to the effect that they ought never to have carpets in which they trod roses under foot. He could not but remember that in the East at this season of the year it was scarcely possible to move one's foot without flower after flower being crushed. It seemed to him by no means unreasonable that the carpet and herbage; indeed, more natural by far than treading upon artificial tessellated pavements. This remark applied with reference to carrying the principle of adherence to nature too far; for, in fact, on looking round the room at the various specimens brought forward as the original productions of decorative art, there was very little adherence to nature in any of them; as to the carpets and mural decorations of the East, he had before observed in that room that the school of art in Eastern countries was kept up by the devices, or monastic orders, in the same way that similar arts were fostered by the monastic orders of Europe in the Middle Ages. With regard to paneling, he would like to mention one observation, because decorators did not always in this respect emulate their predecessors; for it was but too common, on going into a drawing-room of the present day decorated in panels, to find that they were so arranged as to make it appear that the doors and windows of the room had been put in after the fact. He had seen older examples of this kind of work, it was very rarely that anything of this kind was found. This was a matter not depending on the study of nature, but on the cultivation of taste; and he hoped, as more progress was made in the study of nature, so also they should not forget to develop good taste.

Mr. Grace said there was one topic, that of encaustic painting, upon which he should like to say a word. In his opinion it had entirely failed in this country, and the reason of it, he believed, was not difficult to ascertain. It had not only failed in this country, but the mass too had most zealously brought it forward in another country, Kaulbach's plan was not a safe medium for painting. Encaustic required the use of wax as one of the chief ingredients; and when it became dirty, as it very soon did, and required cleaning, that operation was like cleaning a wax candle, the more you cleaned it the dirtier it became. It was also apt to peel and crack, and, on the whole, he saw no advantage in its use. A mixture of turpentine and varnish would produce quite as good an effect as any encaustic painting, without any of its disadvantages. With regard to what had been said by Mr. Hyde Clarke about carpets, he was rather inclined to agree with the lecturer. On one occasion, some time ago, he recollected that the cause of flowers on carpets was warmly advocated by Mr. Ruskin; but on that occasion, he believed, it was proved that flowers in relief upon the ground were exceedingly confusing, and that it was much more pleasant and agreeable, as well as in better taste, to have a carpet perfectly flat under the feet. As to the remarks which had been made about paneling, it had been said before that you should not criticise what was done by incompetent workmen, but rather go to the work of those who understood their subjects, and sought to carry out the true principles of their art.

Mr. Peter Graham fully concurred in the opinion expressed by Mr. Grace, the great improvement of taste which had been shown in this country within the last twenty years. In point of fact, the most influential teachers and those who had most conducted to that end were those who formed the establishment at Marlborough House which was called the "chamber of horrors," where the things found at once should be avoided and what should be followed.

About the same time Mr. Owen Jones read a paper in that room on "The Principle of Colouring, and on Form in Decoration." It was a most valuable paper, and, as he could testify, he had with the "Grammar of Ornament," great influence. He (Mr. Graham) was not one of those who thought that there was any superiority of natural taste in the French, but he must admit that they had a much larger number of workmen capable of executing with facility artistic works. In this respect the English were far behind them, although they were steadily, and he hoped rapidly, improving. The point which he might mention the various Exhibitions which had taken place since 1851, the productions in which had surprised our French neighbours. He especially mentioned South Kensington, for he believed the French set even a higher value upon that establishment than they did. With regard to style, he had no opinion of opinion that he might be very catholic in admitting varieties of style; and, although, in the case of carpets, floral decorations should be treated as flatter as possible, still a very beautiful effect might be produced with them if they were kept in harmony with the decorations of the room and the furniture by which they were surrounded. Of course he condemned large floral devices, but where the carpet was made in imitation of what might be seen in nature, small flowers on a neutral ground, the effect produced would be exceedingly beautiful and pleasing.

Mr. J. M. Blashfield, after referring to the effect of the French, Minton, Pugin, and others, said with reference to the French of the walls, he might mention, in respect to what had been said by Mr. Pittman on the subject of ground-work for fresco-painting, that he had the honour of making several experiments for Sir Charles Barry, with reference to the best mixture of lime for fresco-painting in the Houses of Parliament, and he did not find that the best arose from the bricks. London stock bricks were generally made partly of ashes, decayed vegetable matter, common mould, and an indifferent quality of clay, containing sometimes a quantity of chalk; and these bricks were very seldom sufficiently vitrified,—only just enough to form a smooth surface, and without any special character. These salts by degrees worked their way up to the surface, and would sometimes effect even the strongest mortar,—as strong as Roman cement,—and these decrecent salts would impair the lime, however well prepared, and destroy the colour put upon the surface. On the other hand, a better description of bricks with that description of lime did not produce the same result; and it had been found by some experiments recently referred to at a meeting of the Institute of British Architects, that abroad tiles were now being made free from the impurities which had been referred to, and perfectly burnt, which, when covered with lime, were found to be very ordinary good bricks, and which, vitrified, and striated upon the surface, so as to hold the plaster, there would be no difficulty, even in this climate, he believed. With regard to ceiling decoration, he might state that there were some remarkably fine examples amongst our English mansions. For instance, Burleigh House, hardly contained salts as important on the principal floor the ceiling of which did not afford an example of modelling which any one would be proud to study and imitate.

Mr. Laing said he believed the chief cause of the failure of encaustic painting in England, which was indisputable, was the moisture of the climate. The makers of French paper-hangings said that their ordinary gold-papers were not so brilliant as the French, and that they were not so brilliant anywhere except in Holland and England, where it was found necessary to have some protection from the atmosphere.

Mr. J. D. Grace said there was one thing which every decorator who took an interest in the subject should regard, and that was, that hardly any artists of high standing could be found to make a decorative use of their genius; and if by chance they were entrapped into painting what was called a fresco, they were as much afraid of the surface around it being decorated as if it would infallibly destroy the picture, forgetting apparently that almost every fresco of any importance in Italy could be surrounded by decoration in the richest lines, though admirably adjusted to each other. The artist should not be alarmed at the proximity of colour to his work, but should rather strive to so arrange the surrounding decoration that it should form a harmonious whole. Perhaps the most striking instance of this was the

chamber at Rome, in which was the famous Raffaele fresco, "The School of Athens." The chamber was not only decorated in the richest colouring, but it had been done by another hand for itself. Raffaele had too much good sense, as well as generosity, to destroy the magnificent ceiling of his predecessor, Sodoma, for fear it should injure the effect of his fresco.

The Chairman (Professor Hayter Lewis) said all seemed to agree in the main principles enunciated by Mr. Pittman; as, for instance, that a ceiling should not be a plain white surface, that very bright carpets, chosen because they were pretty in themselves, without any reference to their surroundings, were to be avoided, and in nine cases out of ten it would happen that such a carpet would kill anything else in the room. He could also agree in the denunciation of the marble shells which were too common in halls and great rooms, and at some points he must differ from Mr. Pittman. For instance, as to mosaics, he believed that in a climate like that of England mosaics with gold backgrounds, especially where large surfaces were to be covered, were by far the most valuable kind of decoration possible. He did not need to refer to the mosaics of the Continent, and could not but contrast the grand old specimens in which the gold ground-work was in the glass itself, with the modern imitations, such as that in St. Boniface at Munich, where the background was made simply of gold-leaf put on in the ordinary way. There could be no question that old mosaic work, done, if not in the time of Constantine, was shortly afterwards, was infinitely superior to any other kind of decoration whatever for large surfaces, which required to be seen from a distance. A good deal had been said as to the imitation of nature, with which he had no desire to quarrel; but, on looking round the room, he saw no specimens of nature which he could say were a copy of nature, and in fact the minute copy of details was hardly to be desired, but rather an imitation of the general principles. He had paid much attention to this subject, and had found that in nature there was hardly such a thing to be found as a pure tint; occasionally a bright spot would be found in flowers, particularly in the tropics, but it was always in the flower itself, never in the foliage, which formed by far the larger portion of the vegetable world; all this was a strong neutral tint. It must also be remembered, in decorating rooms, that the space at command was limited; that the carpets and wall decorations could not be compared with tables, chairs, and other things, which did not occur in nature. The rule, therefore, seemed to be, to follow the general principle of nature in having a predominant neutral tint, relieved by bright spots or places; and in order to do this effectually and well, nature must be studied a great deal more closely than most people were in the habit of doing. He believed the plan which had been followed by the best decorators in past times had been this,—to make the flooring of comparatively neutral tint as a ground-work, then to put in the walls of a deeper tone, and to lavish the grandest efforts on or near the ceiling.

RAILWAY ABANDONMENTS.

The last stream-tide of speculation, or of enterprise, which sought its exercise and indulgence in connexion with schemes requiring legislative sanction, reached its highest point in 1866, when 633 private bills were petitioned for, and 322 bills received the Royal assent. The collapse came in 1867, and since that year the number of bills petitioned for in each successive session has been much smaller. Not only so, but the character of the bills brought forward in diminished numbers in these later sessions differs considerably from those promoted in the earlier years. In 1860, of the 633 bills petitioned for, 150 involved the deposit of plans, implying that the bills provided for the construction of new works. In the current session, 240 bills appear on the general list, and 139 sets of plans and sections have been lodged at the private bill office in connexion with them, of which twenty-five are for street and road tramways. Since 1867, inclusive, an increased proportion of the bills petitioned for have been for legislative sanction to the abandonment of works authorised in former sessions, for extension of time, financial arrangements, and for additional and various powers. It has been charged against the Legislature, and not without cause, that the procedure in relation to railways has been unwisely,

hap-hazard, and has involved extravagant costs. In one direction, the Legislature seems now to be adopting a definite policy, which is calculated to prevent in the future a prodigal waste of money in connexion with any new lines that may be projected, a waste with which railway companies have been, in the past, in many instances, directly and exclusively chargeable. Parliament has sanctioned the abandonment of a number of small and comparatively unimportant lines, but the course of legislation with respect to this matter seems to be the rejection of petitions for abandonment, except in one or other of two grounds,—the proved insolvency of the responsible party, or agreement and mutual consent among landowners, the inhabitants of the locality concerned, and the promoters.

An important precedent has just been established in the Brighton Company's bill, which has been inquired into by a committee of five peers, presided over by the Earl of Derby. Although an omnibus bill, its backbone and chief provision was for the abandonment of the Surrey and Sussex Junction line, which was originally promoted by an independent company, but eventually adopted by the Brighton Company, with the view, as has been alleged, of enabling them to secure better terms for the traffic agreement with the South-Eastern. The line is above half-made; it would be about twenty-two miles in length, and would give the Brighton a direct route to Tunbridge Wells. The contest in the case of this bill has not been, as many others are, one between powerful railway companies, but between the Brighton Company on the one hand, and a firm phalanx of landowners and inhabitants of the district on the other, who made out a strong case against the proposed abandonment. The Brighton Company had, of their own free will and voluntary motion, adopted the line; many landowners had been indifferently or opposed to its construction, but had been persuaded into acquiescence, and portions of their property, which they had not desired to part with, had been appropriated by the company, and their estates were now disfigured by the partially completed works which it was proposed to abandon.

It is quite consistent with the declared policy of Mr. Laing, the able chairman of the Brighton Company, that this line should be abandoned if the company can get rid of the obligation. It seems hard that a company should be compelled to complete a line that they know will be worked at a loss. This may be quite true, but the Legislature properly says to companies in effect, "Count the cost before you come for a bill to make a new line; when you have got the powers to ask for, you will be held bound to exercise them; and you must not suppose that you are at liberty to play fast and loose with Parliament and the public in getting and giving up lines to serve your own purposes. It is quite time that land and property holders and the public should have the assurance that when the project of a new railway is agitated, promoted, and sanctioned, it is also settled that the scheme is a reality, and not a time-serving sham." In accordance with such views, the bill was rejected by Lord Derby's committee.

CHICHESTER.

It is in contemplation to restore the Lady Chapel at Chichester Cathedral as a memorial of the late bishop, Dr. Gilbert. It is not a little singular that the restoration of the chapel itself, which forms the extreme east end of the cathedral fabric, and which most probably dates from the thirteenth century, is attributed by many writers to another Bishop Gilbert, called also De St. Leofard, who held the see of Chichester from 1285 to A.D. 1305.

The projected castle-mound has now so far advanced, that a general description of it may be given. The principal entrance to it may be from the Eastgate-square. A new road, 30 ft. in width, is to be formed. The boundary wall will be composed principally of flint, and generally 8 ft. 9 in. high. Nearly the whole of the route will have a surface of asphalt. The ironwork of the gates at the entrance to the market are not comprised within the contract. The rails of the pens and cattle-standings will be formed of solid round wrought iron, and will consist of four for pens to sleep in, and one for one row, which will have five; the pens for pigs and lean calves will have five. The whole of the rings will be built into the wall at the expense of the corporation, the contractors only

being required to paint them. Indicators for wheels and number-plates for pens, consisting of Willing & Co's patent enamelled wrought-iron, will be placed in conspicuous positions, and all the wrought and cast iron work will have a finishing coat of paint of a chocolate color. The channels connected with the pens of sheep, pigs, and lean calves, and also between the standings for store cattle, will be lined with Staffordshire vitrified blue plain channel bricks, which it is expected will be obtained from the Albion Blue Brick Works, West Bromwich. The channels in other parts of the market, for fat cattle, will have grooved bricks, and the lean calves will have Portland stone. The stones used will be Portland—that of a whitish grey colour, with the best finish and thoroughly burned Glyde lime and White's Portland cement. The brickwork will, it is believed, come from Fareham. The market must be completed by the 31st of December, 1870. Haverley is the engineer, and Messrs. Cliffe & Co., contractors.

THE ANCIENT MAP OF THE WORLD IN HEREFORD CATHEDRAL.

The celebrated Hereford Mappa Mundi, the work of Richard de Haldringham, who held a stall in Hereford Cathedral A.D. 1290 to 1310, is about to be published, and we would make the fact known. The map itself is the largest, and most carefully and elaborately finished, of all the known Mappa Mundi, and is, indeed, a literary and archaeological gem of the first water. It is being published by a sub-committee of the Woolhope Club, and so effort is spared to get it out with the utmost accuracy. It is not done for profit, but simply as an object of the highest interest, and to ensure the maintenance of perfect copies of the map, before the original gets too disfigured by time to allow of its being copied, or lost anything should happen to it. Its size is 6 ft. by 3 ft., and to bring out the facsimile will require thirty-six lithographic stones of the largest size. The strict accuracy of this facsimile will be guaranteed, and may be tested by every purchaser; for in the 4th. book of descriptive letterpress which will accompany it, will be four large photographs from the map itself, embracing the whole of it (of 15 in. diam. size), and giving a more correct view than can be shown in text, if it exist, by comparing with the lithograph. It is offered at the cost price of its reproduction, and, indeed, the number published will be determined by the cost, when further experience has partially tested the estimate. It is far advanced in preparation, and it is hoped that sufficient subscribers may be got to enable it to be issued by the end of this year. It is rather a more serious item as to cost than the sub-committee had thought; but they have decided that it shall be done well. The Rev. F. Havergal, of the College, Hereford, the College librarian, is the general editor.

THE PROGRESS OF DONCASTER IN 1869.

The town of Doncaster is generally looked upon as a town which approaches something like a finished state. Its rich corporation and its St. Roger are more vivid characteristics of its prosperity than its manufacturing or commercial industries. The town, always noted for its cleanly and well-managed streets, continues to make progress. Several of the streets have been flagged during the year; these include the east side of Marsh-gate, in Cleveland-street, and the east side of Cartwright-street. The Causeway in front of the Grammar School and Bases-terrace has been widened. A large plot of land, which was lately occupied by Mr. W. L. Crowther as a nursery-garden, has been sold by the Town Council, by the sanction of the Lords of the Treasury, for building purposes, for the sum of £3,600, 12s. 8d. A street 45 ft. wide has been formed. The frontage-ground to St. James-street to the depth of 6 ft., from the new street to the depth of 9 ft., is to be kept open and not to be built upon. In addition to the above, a more direct route between the railway station and the markets is in contemplation. The proposed street is to cross the river Ouse. It is proposed to fill up the bed of the stream, on a plan similar to that of the new street, and road would greatly relieve the traffic between the station and the market on busy days. A number of houses have been built during the year. Mr. C. Verity has erected four

of ten semi-detached houses, at St. George's-terrace, on the Thorne-road. They are all of brick, with pierced stone balconies and string cornice on the top of a white moulded string-course. Messrs. Lister & Son have made plans for the erection of large business premises in the Magdalen, on the property of Mr. Somerset. The front is of an ornamental character, faced with white bricks, and relieved with stone dressings and colored brick bands. Several other houses of an ornamental character have been erected in the town and its vicinity during the past year.

APPROACHING INTERNATIONAL EXHIBITION.

The first of the series of Annual International Exhibitions of Selected Works of Fine and Industrial Art and Scientific Inventions will be opened at South Kensington, London, on Monday, the 1st of May, 1871, and close on Saturday, the 30th of September, 1871. The exhibitions, as our readers know, will take place in permanent buildings, now being erected, adjoining the Royal Horticultural Gardens. The productions of all nations will be admitted, subject to their obtaining the certificate of competent judges that they are of sufficient excellence to be worthy of exhibition.

The first exhibition will consist of objects in the following divisions:—

1. Fine Arts applied or not applied to Works of Utility.

2. Manufactures, Machinery, and Raw Materials, including Woolen and Worsted Fabrics, and Educational Works and Appliances.

3. Scientific Inventions and New Discoveries of all kinds.

4. Horticulture. The attention of artists and manufacturers is especially called to Division No. 1. Hitherto the exhibition of works of fine art has been too much limited to the display of pictures and sculpture, disassociated from purposes of utility. Every work in which fine art is a dominant feature will find proper provision made for its display. Painting, on whatever surface, or in any method; sculpture in every description of material; engravings of all kinds; architectural design as a fine art; every description of textile fabric of which fine art is a characteristic feature; in short, every work, whether of utility or pleasure, which is destined to be considered a work of excellence from the artistic point of view, may be displayed in the exhibitions under the division of Fine Art. Every artist workman, moreover, will be able to exhibit a work of merit by himself as his own production.

PROPOSED IMPROVEMENT OF ST. PAUL'S CHURCHYARD AND LUDGATE-HILL.

At the last meeting of the Metropolitan Board of Works, Mr. H. L. Taylor presented a communication from the Commissioners of Sewers for the City of London, informing the Board of the proposal of the Dean and Chapter, and stating that they were prepared to accept the proposal and carry out the improvement. If the Metropolitan Board of Works would contribute towards the cost of it. Mr. Taylor said the corporation of the City had been engaged for the last eighteen years in endeavouring to accomplish this improvement, and had now got the consent of the Dean and Chapter, and the Board of 20,000. The corporation had tried to get a carriage-way on the north side, but he was afraid they had no chance of success, as the north side was very narrow, and it would be difficult to form a carriage-way without removing the railings. It should be recollected that the authorities were willing to bear all the expenses connected with carrying out the improvement at the Ludgate-hill end of the cathedral, including the pulling-down of the old railings, and erecting, probably at a cost of some thousands of pounds, a handsome set of railings which would be a credit to the cathedral; and the Dean and Chapter pledged themselves, in case of there being any profit out of the 20,000, to lay it out in the adornment of the interior. After a discussion, the communication was referred to the Works and General Purposes Committee for consideration and report.

Meanwhile we may add, the barriers at the north side have been removed and the south side closed, in order to carry out the arrangements for improvement; and it is to be hoped the barriers will never be replaced.

NEW GLAZING MATERIAL.

In out-door glazing, whatever amount of care and attention may be exercised, it is occasionally a matter of much difficulty to ensure sound work. This uncertainty arises from various causes; for instance, the non-adherence of the paint-primer to the framework by reason of an intervening film of grease, dirt, &c., the different rates of expansion between the glass and the framework in which it has been imbedded; and the action of the sun on exposed portions while a contiguous portion is shaded. In the latter case, large sheets of glass that have been imbedded in deep recesses, or sashes, or stonework, are often broken; but the greatest difficulty in keeping work sound while the glass remains unbroken is found with contiguous and extended metal sash-work, such as that on the roofs of Paxton construction, railway sheds, and conservatories. A more elastic medium than ordinary putty has long been a desideratum, and we learn from a paper recently read before the Civil and Mechanical Engineers' Society, by Mr. R. M. Bancroft, that a new compound of this kind is being manufactured by Sir W. A. Ross & Co., of London, under the name of *Thermo-Plastic Putty*. It has been used on the new large roof of the Great Northern Railway, King's-cross, and other extensive works, and has been severely tested. This putty, we are told, speedily sets hard, retaining a certain amount of elasticity; but when exposed to heat it becomes soft and more elastic, returning to its former hardness and position on cooling, thereby allowing for the unequal expansion of the glass and its frame, insuring sound work for a long period. The cost is not great.

MOVEMENT IN RAILWAYS.

A NEW arrangement for railways will shortly come before the public under the title of the Pannier system. A single row of piles carries a continuous girder on which the train runs, the carriages hanging down on each side to within a very short distance of the ground. The carriages are so arranged that inequality of weight on one side to the extent of a ton will not effect the action. The small quantity of land required, cheapness of construction, and speed, are advantages claimed for it. Mr. Samuel, C.E., has taken the invention in hand, and we shall doubtless soon hear more of it. Extensions and alterations are going on which will place Edinburgh within six hours of London. A scheme has been proposed by means of which, it is asserted, Manchester will be reached by London in two hours. If we understand the proposition rightly, the carriages would pass over rollers kept in motion by turbines. The wind is rising, and we may look to see enterprises launched.

IMPROVEMENT ON COMMON STAIRS IN EDINBURGH.

We have recently said so much on the disgusting condition of the Edinburgh common stairs, that we conceive it to be a duty, as it is certainly a pleasure, to refer to some substantial efforts we observe being made in the shape of reform. Most of these staircases are so planned, as our readers will remember, as to have the water-closets, or occasionally for no less than twelve families, communicating with them and ventilating into them; and hence it sometimes happens, as in the case of a choked or defective soil-pipe, or a deficient supply of water, that the results are so horrible as to pass the bounds of description. As we have already said, these common stairs are nothing but a common nuisance, and, as no doubt, responsible for a great proportion of the very high death-rate which is at present predominant in the capital of Scotland. It is therefore with pleasure we observe that in the plans for a new block of houses in Inverleith-terrace,—

"Every modern convenience is introduced. It is especially worthy of notice, as it has been taken for a secure proper sanitary condition. A ventilating shaft, with a sectional area of 12 ft., is carried up through the alignment, communicating with the soil-pipe at the bottom, and accessible from each house by means of a trap-door. Into this shaft every water-closet has an opening,—an arrangement greatly preferable to the common one of ventilating such places from the common stair. All the soil-pipes are carried down through the shaft; so that, in the event of any pipe being required, the necessary work can be executed without necessitating domestic inconvenience."

Commending this wholesome sanitary practice to the Scottish architects generally as a praiseworthy attempt to get rid of a national nuisance, we may at the same time remind our

readers that it is many years since we first directed public attention to the subject. The architect concerned in the block mentioned is not the first, however, who has adopted the ventilating shaft in Edinburgh. Councillor James Cowan has already adopted it as a leading feature of the internal construction of his ornate range of tenements which has been recently erected at the south corner of the Castle-terrace.

THE SANITARY STATE OF WHITEHAVEN.

TYPHUS fever still prevails at Whitehaven. During the last four months there have been, out of a population of 19,000, from 300 to 370 cases in the town, and one patient out of every six died, the total number of deaths having been sixty. This state of matters has attracted the attention of the Medical Department of the Privy Council, who have addressed a letter to the Whitehaven trustees, asking for information respecting the outbreak, and for an account of the steps which the trustees had recently taken to diminish the prevalence of the disease. The reply of the trustees sets forth the extent of the disease, its probable causes, and the nature of the remedial measures which have been adopted. The predisposing causes are described as being the want of a proper system of household drainage, the want of close accommodation, the over-crowded, over-built, and badly-paved state of many parts of the town, and the dissipated and irregular habits of the bulk of the lower classes residing in the lowest parts of the town, and amongst whom the disease had been almost entirely confined.

INSTITUTION OF SURVEYORS.

At the ordinary meeting of this Institution, Mr. John Clinton in the chair, a *Plea for Culture in the Profession of a Surveyor* was read by Mr. Jeremiah Matthews, to which we shall return. This paper was preceded by the adjourned discussion on the paper by Mr. E. F. Squary, entitled "Farming Conservancy," which was concluded, after an animated debate in which many members took part.

The next meeting will be held on Monday evening, April 4th, when the paper by Mr. J. Matthews will be discussed.

NEWCASTLE-UPON-TYNE.

St. Nicholas's Steeple.—The restoration of this vast pile of masonry is fast approaching completion. The scaffolding has been entirely removed, and, with the exception of the south-west angle buttress, the building, although patched, has the appearance of once more setting time at defiance. The buttress mentioned, octagonal on plan, is being rebuilt to project some few inches beyond its predecessor's original face, thereby leaving great additional strength to the weaker side of the tower. The task must have been an arduous one both to the architect, and to Mr. Walter Scott, the builder.

National and Provincial Bank of England.—Within the last few weeks a block of property situate at the corner of Mosley and Dean streets, and consisting of four large shops, together with offices, warehouses, &c., has been leased to the ground. The site, naturally a large one, has become the property of the National and Provincial Banking Co., who are about to build themselves new and commodious premises. Mr. John Gibson, of Great Queen-street, Westminster, is, we understand, preparing the plans, and it is not referred to is openly situated in the principal and most fashionable part of the town, there is a good opportunity for display of skill.

VALUE OF SEWAGE.

Sir,—There are some observations at page 231 in the *Builder*, 19th inst., relative to my remarks on sewage, made at the Society of Arts February 25th, on Mr. Hope's paper. On looking at the report, I see that I stand for 100; this is of course a mistake. The value of 100 tons of sewage has been estimated as worth 17s. 6d., or about 2d. per ton. This is the chemist's value and not the farmer's. Sewage, the year round, would not be worth more than 1d. per ton chemist's value. No farmer, would, however, pay such sum for sewage in bulk.

I said 200l. gross per acre had been received by growers of cabbage; but I did not ask the meeting to credit that such sum could be ob-

tained generally: I named 20l. and 25l. per acre. The Edinburgh sewage meadows let at rates from 25l. up to 45l. per Scotch acre per annum. Four Scotch acres are about five statute acres. The "Lessons of Sewage" may learn my views if he will read the appendix to my report on the pollution of the river Thames at Barking, page 10. This report has just been presented to Parliament, and is therefore to be purchased from Mr. King, 34, Parliament-street. In this appendix I give the titles of official reports issued on this sewage question, and your correspondent may read and learn more than he knows at present. ROBERT RAWLINSON.

ARCHITECTURE IN THE ROYAL ACADEMY EXHIBITION.

At the last meeting of the Institute, a letter was read from Mr. Smirke, R.A., in reply to one which had been addressed to that gentleman on the admissibility of leaving to the architect members of the Royal Academy the selection of drawings sent to the Royal Academy for exhibition. In this Mr. Smirke stated, that the attention of the Royal Academy council had been called to the subject, but that, although the opinion of architect members of the Royal Academy would much influence the judgment of the council on the subject referred to, the council of the Royal Academy could see no reason for altering their existing regulations in respect to the choice and arrangement of works sent for exhibition.

SAFE FOR A YEAR.

Sir,—At a recent meeting of the Neath Highway Board it was stated that the surveyor "had examined the Glynneath Bridge over the river, and found the work now in excellent condition; and that it would stand for twelve or fifteen months or for a longer period, with occasional repairs and carefully watching." (The italics are mine: I quote from the report.)

A bridge to be in an "excellent condition" (with regard to strength, I suppose), and yet to be considered safe for "twelve or eighteen months" only, and then requiring patching and "carefully watching," appears to me rather paradoxical. Supposing it should last "twelve or eighteen months," would it be safe for general road traffic after that time, even if the patching and watching were continued? I commend these few remarks to the notice of the said highway board, and to the public using this wonderful structure. J. D.

AS TO THE IDENTITY OF INTERESTS BETWEEN EMPLOYERS AND EMPLOYED.

SOCIAL SCIENCE ASSOCIATION.

RECENTLY, in the meeting-room of the Society of Arts, Mr. Godwin in the chair, Mr. Frederic Hill read a paper "On the Identity of Interests between the Employers and the Employed." Mr. Hill commenced by saying that although many persons would even now assert that instead of the interests of employers and work-people being identical they were antagonistic, it should be remembered that ideas which were now on all hands admitted to be fallacious had been considered to be self-evident truths. No one now doubted that the interests of England and Scotland were identical, yet a few centuries since they were believed to be antagonistic, and an Englishman and a Scotchman were stated to be natural enemies. It was not until since it was held that the interests of England were opposed to those of her colonies. In the same way, the speculators, who were now admitted to be the best friends of the consumer, and who stored, for their own advantage, no doubt, but also for that of the consumer, corn and provisions till the important time of scarcity, were punished by our laws of a century ago as forestallers and regraters. It was the interest of the employer that the workman should be paid sufficient to enable him to live in comfort, so that he should be induced to continue to labour for him; and it was likewise the interest of the workman that the employer should have his labour at a price which would enable him to compete with others, and, therefore, to continue to afford employment and wages to the workman. It would be as well to consider the points on which their interests were most generally supposed to be antagonistic. First, was the labour and the mode of estimating its value; second, working overtime; third, the employment of apprentices; fourth, the payment of females; fifth, the mode of paying the

pages; and finally, was denied the hour of labour. On the first point he contended, with reference especially to task-work, that it was the fairest mode of estimating the value of labour, and was as beneficial to the workman as to the employer. Working overtime was, in the same way, benefit to both parties. The employment of apprentices and of females would, to some extent, be a benefit to the workman, and stimulate to a similar extent the consumption of the manufactured article, thus being advantageous to both parties. As to the mode of paying the wages, he was in favour of payment in kind, or, at least, of permitting the workman to make an agreement to receive such payment with his employer. His own country, he said, was the best system in the iron country, where he had seen the men's wives obtaining various goods at the store, and the men admitted they were more comfortable under the system; but they, nevertheless, thought it should be changed, for they considered a man should have the spending of his own earnings. In Scotland, too, it was the custom for the men to be paid partly in kind, and the plan worked very well. The plan had, moreover, the advantage of cheapening the cost of production, and was thus for the benefit of both parties. With respect to wages and the hours of labour, it was for the interest of both parties that a fair day's labour should be given for a fair day's wages, for the reasons above stated.

At the conclusion of the paper, the chairman having invited discussion

having invited discussion, Mr. Paterson said he had listened to the paper and had not a word to say, but, however much all might desire to see harmony and peace, it was not safe to ignore facts. Though he agreed with Mr. Hill that the smaller and more immediate interests were merely in apparent opposition, this could not be so clearly seen on the great points of wages and the hours of labour. If it were not for the fact that each man would like to combine or to strike for an advance of wages, he did not agree with him. How was an accurate understanding to be arrived at? Would the selfishness of men and the similarity of interests, when balanced, produce harmony by the measure of the resolution of forces? The masters were certainly looking out for their own interests, but they did not look after theirs, the selfishness of the masters would be more powerful. It was the selfishness of the masters that was the greatest bar to the profitable employment of women, for they had to obtain their work at lower prices. If a woman produced a piece of work as well as a man, why was she not paid as much as he? A woman could not earn only about 4s. a week making Lucifer-match boxes; those who could earn 7s. a week were exceptions. The women who made clothes for the shop-boys were paid much too little, and were at the mercy of the capitalists, because they had never combined. The employers were ready to obtain the best of the workmen, but not to give. Cheapness of production might arise from an abnormal cause,—not the abundance of the means of living, but the abundance of those who worked. It was said that every reduction of wages came back, and in proportion to the articles consumed; but this was not proved. If a carpenter earned 10s. a week, and his wife made 10s. a week, he would not have a corresponding reduction of rent because his wages were but one element in the price of the house. Ground-rent and other charges entered into the calculation; in fact, the wages formed only 40 per cent. of the cost. If it were the interest of the employer to give a fair rate of wages for a particular class of labour, he would not allow the journeyman bakers had to work seventeen or eighteen hours a day, while the better class of bakers did not always give better wages or exact less work? It was absolutely essential that men should combine and resist the employers. An employer might be himself willing to give fair wages, but he would not do so if he could see that his men would ground their men down to the lowest rate they could induce or compel them to accept, the good employer would be compelled to pay the same rate or be driven out of the market. He was obliged to admit that there had been imprudent strikes, and strikes not by any means justifiable, but it was nevertheless the case that the employers had completely ignored the fact that the identity of interests.

Mr. Briggs could endorse every word in the paper of Mr. Hill on this very difficult question. He had been himself an apprentice, a journeyman, and an employer, having commenced work fifty years ago, and had had to deal with men

and things go on then. He thought trade-unions were the worst thing that could happen to the workers of a society. He did not mean to say that they could not co-exist with society, but, as they were at present, they were the real pests of society. If they combined themselves to form co-operative or industrial associations he would not object to them. They ought not to combine themselves to get the best of the employers, but to get the best of the sick. A friend of his in Liverpool, who employed 2,000 or 3,000 men, had had a dispute with his hands, and some of them who had been with him for forty years came back and begged he would try to employ them secretly, saying that unless they struck with the others they would lose their jobs, and he would not be able to pay them for forty years. In his business they had had disputes about inferior hands, and inferior workmen had been left out and left upon the poor-rates because the trade-unions would not allow them to accept a lower rate of wages; but an understanding had been come to that no man should be allowed to take their own prices.

May said, it was mostly sliced that labour was regulated by the laws of supply and demand, a law which he thought most monstrous. If he understood trade-unions, their object was to obtain for the working man an equitable share in the profits. The more labour there was in the market the cheaper the employer would get it, and the possessor of machinery would thus become more wealthy, while the poor would remain poor. If there were a proper division of the people on the land, there would be no need for trade-unions to work. He would be in a country where if he was a working man he would not stay in this country if he could escape from it.

could escape from it.

"I can remember when mechanics had as 6d. and labourers 2s. 6d. a day, and were not paid sometimes till nine o'clock in the evening on Saturdays, and sometimes on Sunday mornings. Those were the times when they did not understand union; but as the number of men began to increase, and the rate of wages of the working men had risen, as well as the rate of prices. He objected strongly to payments in kind, and instanced the excavators, whom he used to pay monthly, when making the line from Potter's Bar to Hatfield, who used to get their little bit of food by way of payment so much at the chandlers' shops. The men who earned the money were the persons to spend it as they thought proper, and he had managed to let them have their money. Many of them had then sent their wives to the market to buy their own meat, or some other articles, and he was glad that the men had to trust to the judgment of one man for the quality of a large variety of things, such as one man could not be expected to understand. He had seen an instance of this at the time of the "Co-operative Store" in Islington, near Bridge-road, where he had dealt for years, among an employer of workmen, he was greatly in favour of co-operative societies. He had bought socks for 1s. 7½d. a pair, and had been laughed at home, for they were such a slight weight, but he had elsewhere for about 7½d. He had no doubt the people had been most honest desire to act fairly, but had been taken in in the City as to an article which they did not understand. In the town where he was engineer the wages of mechanics were £100 a year, first class 9s. a week, second class 8s. 6d., and third class 8s. 3d. He left there were earning 1½s. a week, the men beginning to understand their own value, which they could only learn from a union with their fellows. He contended that there was no shirking of work by a skilled mechanic, and that the same work was done in the shops now than fifty years ago."

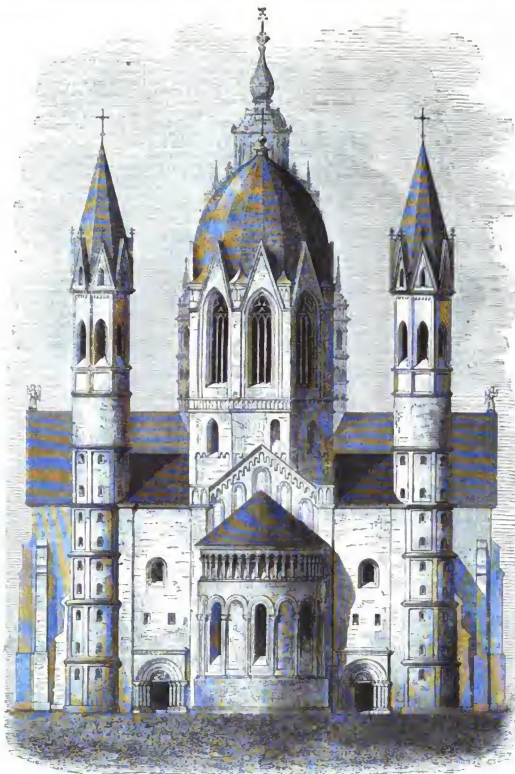
Victims also did not work from a very early age, and did not think there had been any very great change in the character of the work so far as the workman was concerned. There was no doubt that machinery was much better, and articles made by machinery were made more rapidly and were better finished than formerly. But he thought the workman did his work less well than he used to do, and that he received higher wages. He had had 1,000 people in his employment for fifteen or twenty years, and he thought workmen sought more for the end of the day than they did fifty years ago, when they received less wages. He did not agree with Mr. Hill as to paying wages in kind. Piecework was opposed in the building trades, and if it were opposed in the cotton trade, and complete with other countries. This subject was a large one. He thought that a man receiving

of 8s. a day ought to give the nation the worth of his wages in work done. He agreed that we must go in the direction of interesting the workman in his business by giving him a share in its profits. An employer from America had said that men did not give their heart to the labour. What was wanted was to enlist the hearts of the workmen, and unless we succeeded in that we should leave ourselves much behind the position we ought to hold in the year 1880. We did not care where our work was done, but we must make it so that the men doing it would be done cheerfully and not grudgingly. They would be the Belgian make something that he was adapted to make? The unerring law of Providence would be sure to have its way. The workman feared too much, and he lost himself when he tried to lessen the amount of work which he put into the day. A few years ago the cry was a fair day's wage for a fair day's work, and now how to get a fair day's work for the wage.

Mr. Botley, Mr. Bryan, Mr. Creed, and Mr. E. Wilson having made some observations.

Mr. Wilson having made some observations, Mr. J. H. Wilson, of the same system, said that he was not free trade, but monopoly under the pressure of the employer. It might be a violation of free trade for the Legislature to say that in no case shall the employer effect an exchange with the employed. A very suitable objection had been raised to the system that it led to an overproduction of commodities, but that was a question which he could not be a judge. He was surprised at the remark of Mr. Paterson, as to the reduction of wages not causing a corresponding reduction in commodities, for he ought to know that he could not argue on the reduction of the wages of a carpenter merely, but upon a general consideration of the whole. If he had 10 per cent. of the value of all the materials in a house consisted of the value of the labour expended on them. As to the increase in ground-rent alighted to, he would resist his desire to go into the question of how far a man who had done nothing to increase the value of the property was allowed to enjoy that increase. If we allowed the utmost possible scope to trade-unions, their sphere must still be limited, for there must be a point beyond which they could not go. When masters and men met and settled that the price of a certain piece of work should be raised, the question they should have made it 7d. ? What was the point beyond which they could not go ? Allowing a certain margin, there must be something to regulate it. The gentleman who had immediately preceded him had made some valuable and some very wise remarks, a part of the former being what he called the "unionism" of the working men to the fact that they have in themselves a great amount of capital. Working men complain that they cannot save money, yet they boast of the trade-unions having two or three hundred thousand pounds. Why were these means lying idle ? The sooner they took up this point the better.

The Chairman moved a vote of thanks to Mr. Hill, and said the inquiry was one of enormous importance at the present moment. He thought the paper had been a little misunderstood; he had heard nothing in it condemnatory of trade-unions; its object was to show that the employers and employed were not identical, and so he believed they were to a great extent, though not wholly. Probably there had never been so many building operatives out of employ as there were at present, and he thought this was partly due to differences between the carpenters and ironworkers, the gas fitters, the carpentry and ironwork now being asked, and the foreign carpentry was very little cheaper than that made at home, if any. He thought there were many wrong points in the rules of trade-unions. With regard to overtime, it seemed to him a suicidal policy to forbid them from entering into the class of employers. In every profession advancement was scarcely possible without working overtime at one period of life. Great lawyers had attained eminence by working fourteen, sixteen, or eighteen hours in the day; and what rising lawyer could afford to do otherwise? He would not say that he would not work when he would? And why should artisans prevent their brother artisans from working? Ask those masters who had risen from the ranks how they had done it, and they would say by piecework and overtime. With regard to apprentices, he thought that the time spent in learning was too long, and that the wages were too small. He had heard distressing statements from fathers of families who had



MAYENCE CATHEDRAL.—TWELFTH AND THIRTEENTH CENTURIES.

[See p. 237, *cont.*]

been prevented from bringing up their sons to their own trades. If a bricklayer was prevented bringing up his son to his own trade, and went to the plasterers, he found the rules there prevented him as effectually. An improved education was of the utmost importance, and on it the success of co-operation must mainly depend. How were these boys to get their education? As to the effect of trade-unions on the work, he feared it had been to lessen the number of really skilled workmen. He could not resist the opportunity, he said, in the hope that it might reach the Government, to urge on them the necessity of immediately going on with some of those large works for which they had the sites, and for which money had been provided, and, by so doing, bringing into employment a number of men. He thought they might put away the

fear of strikes, which he knew they felt, and he thought the workmen might do something to meet the times by concession. He concluded by moving a vote of thanks to Mr. Hill.

The vote of thanks was put and carried unanimously. Mr. Hill, in the course of his reply, said there was not one word in his paper condemnatory of trade-unions. He was a member of the committee on labour and capital appointed by the Social Science Association, which had lately promulgated some resolutions as to the principles on which legislation should be based with regard to trade-unions, and, as an association, they had declared their opinion that not the slightest legislative obstacle should be put in the way of combinations so long as they respected the freedom of others, and exercised no coercion over them.

He had no wish whatever to interfere with them at all. As to the *truck system*, he differed from the views of Dr. Hodgson. Though he felt great satisfaction that upon the whole he had had so much encouragement, he was not surprised that on this point there was a difference. He might be wrong, and he was not so fallible as to suppose himself infallible; but if he were in error, it was error in which he had indulged for many years. Dr. Hodgson said that in the matter of payment in kind, there should be perfect freedom of action between the employer and the workman. Would it not be an interference with freedom if we prevented him from making a bargain that the labour shall be paid for wholly or in part in kind? The law now prevented such a bargain being made, and he thought it an interference with freedom.



PROPOSED BUILDING FOR REFORM CLUB, MANCHESTER.—Messrs. SLIDKINS & JONES, ARCHITECTS.



TOMB OF DAGOBERT, EXECUTED BY ORDER OF ST. LOUIS, IN THE ABBEY CHURCH OF ST DENIS.

It represents the King carried away by demons, after his Death, and rescued by Angels and Fathers of the Church.

Thirteenth Century.

[See p. 239, ante.

MANCHESTER REFORM CLUB.

We give a view of the Club-house now in course of erection in Manchester. The basement is to be let as stores, the ground-floor as offices; the Club, starting from the first floor, is approached by a grand central hall and staircase. The hall and ante-hall are to be groined, and the walls decorated with terra-cotta and marble columns. The staircase is to be of oak, with carved balustrade, inlaid with various kinds of wood. On the first floor is a large dining-room, 80 ft. long by 32 ft. wide, with panelled oak and pitch-pine ceiling, decorated with gilding. The doors and dado are of carved oak. On the floor are also strangers' dining-rooms, coffee-room, &c. On the second floor is a large billiard-room, to hold four full-sized tables, card-room, smoking-room, and so forth.

The front and side elevations are to be of ashlar work, and with polished granite columns, red and grey, and different coloured polished

marbles. The contract is taken by Mr. Nield, builder, Manchester, for 20,000*l*. The architects are Messrs. E. Salomons and J. P. Jones, of Manchester and London.

EXISTING SCIENCE CLASSES FOR WORKMEN.

SIR,—The people of this country seem now to be thoroughly aroused by the Education question. Efforts are being made by all classes to place the British workman in, at least, as good a position as his Continental neighbor, both as regards primary and technical knowledge, by opening up new sources of instruction. This is as it should be. Let it not be overlooked, however, that it is just possible that the old areas by which many of us have gained our knowledge, may be capable of improvement; and it is in the earnest desire that this may be effected, that I wish to call your attention to one particular source of education, the Science Schools in connexion with the department at South Kensington.

I am an old workman-student in these schools, and, as

• *EX PARVO*, the British Workman must also put his own shoulder to the wheel, and help himself.—E.

a successful one, received, after the examination last year, a list of all the students who passed a stage, together with a statement of the total who failed; that is, who were in fact "plucked." On comparing these together, I was astounded at the relative largeness of the latter, compared with the former, and was instinctively drawn to the conclusion that there must be something wrong somewhere. Take, for example, the three cognate subjects of inorganic chemistry, magnetism and electricity, and sound, light, and heat. In the first subject, of 2,074 examined, 1,305 passed, and 778 failed. In the second, of 2,628 examined, 1,460 passed, and 1,068 failed; and in the third, of 1,305 examined, 655 passed, and 650 failed. How is this to be accounted for? In the first place, it appears to me to arise to some extent from the insecurity of the reward. The teachers receive for their services a reward, which, though depending entirely upon results (that is, no pay, no pay), yet may be cut down at any time by "My Lords;" as it were the late minute, issued in the middle of this session, which not only reduces the pay, but abolishes entirely the lowest class in each subject, which was really the one which paid the best. The teachers are consequently disheartened; they know very well that the number of those who will fail at the next examination will, by this arrangement, be largely increased. Their reward is also further lessened by the reduction of the fees to be paid for the successful students. I cannot fail to observe the want of interest in the classes manifested by the teachers since the issue of the minute, and predict a very unsatisfactory examination in May next is consequently,

notice already given in the *Builder*, ranged from 4,662, to 6,143. The works have been designed and will be carried out under the direction of Mr. Henry Masters, architect and surveyor, Bristol, and are expected to be completed by the end of this year.

Littleton.—The little church of North and Middle Littleton, near Evesham, is about to be restored, at an estimated cost of 1,200*l.*, towards which 850*l.* have been already raised. Mr. Freedy is the architect engaged; the builder has not yet been fixed upon. The restoration will involve new roofs throughout, the chancel arch will be raised and widened, the arch of the north transept, and a new vestry will be built. It is feared that some of the walls may require rebuilding, new windows must be inserted, and several old ones restored. New seats, pavements, and doors are required, besides other fittings; and the measure of the tower will have to be looked after. There are many relics in the building which it is hoped will be preserved, including the snout-hell-ot, an aquint, the entrance to the roof-loft, Norman font, piscina, &c. South Littleton Church also stands in much need of restoration, but nothing can be done to it at present.

South Lynn.—A reredos has just been completed in All Saints' Church. It consists of a centre, having three large panels with smaller ones between them, carved canopies, and pinnacles. The panels are polished alabaster, inlaid with a cross in gold mosaic, and the whole monogram in red marble. Each side of the wall, as high as the window sill, is faced with stone, with incised patterns upon it, finished with a paneled and carved cornice. Above this, the whole of the east wall has been painted and gilded, relieved by two medallions of St. Peter and St. Paul, and the altar has been ground. Two gas standards, the work of Messrs. Hardman & Co., Birmingham, have been placed within the altar-rails. The painted decoration of the east wall was designed and executed by Messrs. Lavers, Barrard, & Westlake, of London; and the reredos was executed, in June, by Mr. William Brown, of South Lynn, from the design of the architect, Mr. William Smith, of London.

Newbury.—The erection of Highclere New Church has proceeded satisfactorily, and the building is now roofed in. It is being built at the cost of the Earl of Carnarvon, and will probably be consecrated in June by the Bishop of Winchester. The architect is Mr. G. G. Scott, and the work is carried on by the contractors under the supervision of Mr. Biackie, who holds the appointment of clerk of the works on Lord Carnarvon's estate.

Postport.—A new church is about to be erected at Postport. The edifice, which has been designed by Mr. W. Adams, Newport, will comprise porch, nave, and chancel, with a vestry on the east side. The chancel and altar are to lie towards the north, and the porch to be added to the south end. The nave, which is to be fitted with movable wooden seats, is to be 53 ft. long, and 21 ft. wide. The chancel will be 15 ft. by 19 ft. 6 in. wide. On the south of the nave roof is to be a pointed bell-turret. The south front will contain above the porch two large windows, a double lancet surmounted by a cusp, with small single-light windows above. The north window will consist of a triple lancet, and two circles. The windows in the sides will be of corresponding pattern. The material for the external walls will be blue Pennant stone, relieved by ornamental courses of red bricks.

Widdersfield.—During the last year the interior of St. Thomas's Church has been considerably improved and beautified by the remodelling of the organ and decorating of the chancel. The organ, which (on account of its great elevation) had hitherto been an obstruction to a circular window in the space at the east end of the south aisle, and was to be played from a gallery, is now so arranged that the player sits in the chancel, and in a line with the choir stalls. These improvements, and the decoration of the organ pipes, have been executed by Messrs. Connacher & Co. The decorations, which have been executed by J. W. Knowles, of York, comprise the powdering of the panels from a gallery, now on the ribs and bosses with gold and colours, dispersing the walls, on the east end of which are painted the Agnus Dei, Pelican, and emblems of the four Evangelists, on the side walls, the Creed, Lord's Prayer, and Commendations have been illuminated. The painted glass, which was in a line with the top of the reredos, the walls have been covered with majolica and

painted tiles, the south side of which has been pierced for the reception of a credence niche: a moulding of Caen stone (corresponding with the one on the reredos) divides the tiles from the painted work. The reredos, pulpit, and marble work, have been cleaned, and the marble re-polished, by Mr. Cudde, of York, who has likewise carved the credence niche and mouldings. The circular window over the organ has been filled in with stained glass, by Mr. J. W. Knowles, representing King David playing on a harp. This glass is the gift of Mr. L. R. Starkey, *Hessle, near Hull.*—All Saints' Church, *Hessle*, has been repaired. The church, which has been nearly rebuilt. The chancel was taken down, and built up again further back, care being taken in the rebuilding so that stone by stone was placed as before. By this means the nave received additional length. Increased width was also gained by adding to the side aisles, and in carrying out the enlargement the different character of the masonry is preserved as indicating the several dates of the workmanship. In the nave the whole of the modern seats have been removed, and will shortly be replaced by open pew benches of pitch pine. The roofing is of the same work, varnished. The cloistery has been rebuilt, and the windows of it are opened for ventilation by a contrivance concealed by the moulded string-course running over the arcade. The west doorway has been opened out, and draughts are prevented by curtains hanging within all the doorways. The windows have been placed in the south aisle, one by Mr. C. L. Ringrose (subject, the Resurrection), and the other by Messrs. H. & J. B. Barlow (subject, the Ascension). The west window has also been restored. The heating apparatus has been supplied by Messrs. Hindle & Co., of Leeds. The middle aisle has been entirely rebuilt by Lieut.-Col. Pease. The seating is of grained oak. The bench ends are filled with tracery and surmounted with poppy heads. The fronts of the seats are ornamented with linen patterns. The roof is similar to that over the nave, but more ornamental. A reredos, sedilia, and credence have been executed in Caen stone. The reredos consists of seven divisions, separated by buttresses and pinnacles, and covered with ogee-shaped heads, small canopies, and carved cresting. The panels of the hot-tresses are filled with pale green marble. The three central compartments of the reredos are filled with Venetian mosaic, by Dr. Salviati, representing the cross, the pelican and young, and the paschal lamb. Above this rises the east window of painted glass, representing Christ sitting in majesty, surrounded by saints, patriarchs, apostles, angels, &c. The chancel is divided from the aisle by wrought-iron screens or grilles, and the sanctuary is enclosed by wrought-iron work, and railings of oak mounted with brass. The encaustic pavements are various in design, the principal colours being red with black bands, gradually growing richer in detail towards the east. Provisionally to the restoration, the whole of the interior stone work was covered with several thick coats of paint and whitewash. These have been entirely removed by the use of Messrs. Nansaire & Co.'s solution, thereby avoiding the "tooling" usually adopted for the removal of paint-work from stone. In clearing away this paint several remains of old ornament have been discovered on the caps and arches of the arcades. These have been preserved as far as possible. The organ has, according to the present custom, been placed in the north aisle as much out of sight as possible. It is a small instrument, but it gives place to a larger instrument. The entire work of restoration and enlargement has been carried out from the designs and under the superintendence of Mr. R. G. Smith, of Hull, architect. Messrs. Simpson & Malone have been the builders, the other contractors being: iron work, Messrs. Hart, Son, Peard, & Co., London; for painted glass, Messrs. Hardman & Co., Birmingham; for encaustic tiles, Messrs. Mann & Co., Broomley; and for church furniture, Messrs. Frank Smith & Co., London. Messrs. Simpson & Malone's contract was for 5,500*l.*

Widdersfield.—The new church of ease for the parish of Tard-bigg, at Webbhead, has been consecrated by the Bishop of Worcester. The late Baroness Windsor erected and endowed the church, the site being given by Mr. R. Hemmings, of Bentley Manor. The edifice is dedicated to St. Philip, and has been erected from designs by Mr. P. A. Andrews, London, by Messrs. McCann & Philip, Andover. The building is of red and

grey stone from Hewell and Tunstall quarries, with Bath stone dressings and decorations. It consists of nave and chancel, with porch, vestry, and bell gable. The style is Early English. The sitting accommodation is for 200, and all the seats are free and unappropriated. In the chancel, over the altar, is a stained glass window in three compartments, representing the Crucifixion, Abraham offering up his son Isaac, and Moses lifting up the Brazen Serpent.

Bunhill.—The church of this parish has been re-opened, after repairs and partial restoration. The buttresses have been rebuilt in cement, the walls have been repaired, and the steeple and spire roof, supported by posts from the ground, and stiffened by longitudinal and transverse curved braces, has been made to relieve the side walls from pressure, and to give to the ugly square-looking tower of late years the appearance of a church, with nave and side aisles, a vestment which is found in the ancient church of Winterton, in this county. The restoration of the chancel being found impracticable, a raised dais, paved with tiles, for the Holy Table, with singers' seats on either side, has been placed at the east end; the remaining space has been provided with open benches of deal, and a lower tower has been made available for a vestry. The porch, the stone and glass of the windows, and the tower stonings-windows have been patched up as much as the funds would admit of, and those, with the chancel, invite the labour of future church restorers. The east window was taken down by Mr. Hubbard, of East Dereham, who carried out the work under the architect, Mr. Edward J. Tarver, of London. During the progress of the work, crocketed fragments of the ogee-headed niche in the east wall were discovered, built up in a recess between the two buttresses, and were removed. The fragments around the east wall niche, powderings of the monogram S. K., as well as the remains of a fresco figure on the eastern jamb of the adjacent window. They have reference, probably to the altar of St. Catherine, before which Margaret, widow of Robert de Beaumont, 1st, was buried in 1410, and to which she gave a picture of St. Catherine.

Poole.—The Bishop of Salisbury has consecrated St. Mark's Church, near Poole, in Dorset. The edifice, which cost 5,000*l.*, was the gift of Miss Georgina Talbot, who laid the foundation stone some years ago. This lady, who erected a large number of almshouses in the neighbourhood, did not live to see the church completed. Her remains have been buried in the churchyard of St. Mark, which has also been consecrated.

Brykewash.—St. James's Church has been consecrated by the Bishop of Ripon. The church is in the Early English Gothic style. It consists of nave, chancel, aisles, organ-chamber, &c., and in place of the usual tower and spire, which it was intended should adorn the structure, a little bell-turret rises at the western end. The nave is 69 ft. in length, 23 ft. in width, and to the apex of the open-himmed roof, 43 ft. in height. The aisles are 10 ft. 3 in. wide. The chancel is 28 ft. long, 18 ft. wide, and 89 ft. high. On the south side of the nave there are five bays, with the columns circular and the pointed arches moulded. The north side there are only four bays, the remaining space having been appropriated for a porch. The chancel-arch springs from carved capitals. Along the aisles the windows have triple lights and tracery, and in the clerestory the windows are alternately cinquefoiled and polyfoiled. The western end of the chancel has triple lights and tracery, and has been filled with stained glass. Medallions are introduced with full-sized heads of the four Evangelists and the four major Prophets. The eastern window has not yet been enriched with stained glass. The seats are of deal, stained and varnished. The sitting accommodation is provided for 600. Messrs. Mallinson & Barber, of Halifax, were the architects. The total cost has been 3,800*l.*; 600*l.* were paid for the site.

Hartlepool.—St. Hilda's Church has been re-opened for divine service. The entire church has been rebuilt in concrete, with the exception of the tower, which was of original design, and the church will now seat 130 additional persons. The east window is of great size, and is the gift of Mr. Emerson, of Pooner, Cheshire; and another in the south aisle has been put in by Miss Dixon, of Seaton. Mr. Pritchett, of Darlington, was the architect. The total cost of the work is 1,600*l.*

Bristol.—The foundation-stone of a new church has been laid at Brownhill, a district contiguous

to the parish and town of Birstal, but which is situate in the borough of Batley. The church, which is expected to be completed by the beginning of November next, is from the design of Messrs. Sharratt & Haxton, of Batley, architects; and the following are the contractors for the several works required in the erection:—Mr. Jas. Booth, of Batley, mason's work; Mr. Joe Willans, of Birstal, joiner's; Messrs. Hill & Nelson, of Wakefield, and Thos. Armitage, of Birstal, plumbers.

Gosbich, the total length, including the chancel, being 90 ft., and the width, including the aisles, will be 48 ft. It will consist of nave, chancel, and vestry, with open-timbered roof, and, as soon as the funds will permit, a tower and spire will be added to the building, and the baptistry will be placed beneath the latter. The total cost of the building, exclusive of the tower, is estimated at £1,700, and the site has been presented to the committee by the Earl Wilton.

STAINED GLASS.

Emmanuel Church, Weston-super-Mare.—A window has been erected in the west end of this church to the memory of Mr. Henry Davies, a gentleman who was well known in the locality, and who died from an accident about two years since. The window has been designed and executed by Messrs. Clayton & Bell, of London, and contains full-length figures of Abraham, Moses, David, and Elijah, with cartoons underneath the figures, severally representing Abraham offering his son upon the altar; the passage of the Red Sea; David beheading Goliath; and the sacrifice on Mount Carmel. In the upright piercings of the tracery in the upper part of the window, there are also figures of small dimension of Enoch and Samuel, Isaiah, Jeremiah, Ezekiel, and Daniel. The cost of this work, we understand, is about 150*l*.

St. Mary's Redcliff.—A window in memory of Edward Colston, the great Bristol citizen, is about to be placed in the north transept of this church. The top or first row of lights will be filled with four designs illustrative of receiving the stranger, visiting the prisoner, feeding the ignorant, and leading the blind. A corresponding series, consisting of feeding the hungry, giving drink to the thirsty, clothing the naked, and visiting the sick, occupies the lowest row. The centre lights illustrate the parable of the good Samaritan. In the first, a wounded man lies on the highway, and the Samaritan, passing by, in the next, the good Samaritan succouring the wounded man; in the third, the journey to the inn; while the fourth represents the payment at the inn. At each corner at the foot are the Colston arms. The tracery will be filled with coloured glass. The execution of the work is in the hands of Messrs. Clayton & Bell, of London. It is expected that the Colston window will be ready by the 21st of April, on which day the Ganyne festival is to be held. The estimated cost is over 450*l*; 40*l*, of which remain to be collected.

Burbury Church.—A memorial window has been erected at the west end of the south aisle of this church. Messrs. A. & W. H. O'Connor, of London, were the artists. The entire design, which is of four lights, symbolizes the one thought of the Resurrection; and the subjects are:—1. The Setting of the Seal upon the Sepulchre, after our Lord was placed in the Tomb; 2. The risen Saviour appearing to St. Mary Magdalene in the Garden; 3. Our Lord walks with his two Disciples to Emmaus; and 4. Our Lord shows Himself to His Apostles before His Ascension. These subjects are enclosed in ornamental framing, bearing half-figures of the four greater Prophets and their emblems, and the half-figures above of the four Evangelists and their emblems. In the tracery is seen the Saviour risen, with Angels in adoration.

St. Olive's, York.—A stained-glass window, the gift of Mrs. Dixon, of York, has been placed in the south side of the chancel. The subject is the Ascension of our Lord; and the work is from the studio of Mr. J. W. Knowles, of York.

Norton Church, near Sheffield.—The east window of the south chapel of this church has recently been fitted with stained glass. The subject is the centre in the Eusebii of the four petals is placed on a coloured ground, relieved by the passion-flowers and vine ornamentation, with the initial medallions and arms of the Cammell family introduced. Two south aisle windows, erected by Mr. Chas. Cammell, of Norton Hall, have also been filled by the same artist, Mr. T. W. Camm, of Smethwick, near Birmingham.

St. Thomas's, Dudley.—A memorial window has recently been erected in the south aisle of this church. The subject is the Ascension of our Lord, which occurs three times in the Gospels. The window glass was executed by Mr. T. W. Camm, of Smethwick, near Birmingham, who is also entrusted with the Great Memorial for St. Edmund's Church, Dudley.

Tamworth Church.—The general committee have accepted the design sent in by Mr. Walton of Nottingham, for a testimonial window to Dr. Millar. The design consists of the figures of the twelve Apostles, bearing appropriate symbols. Above and below are angels bearing scrolls. The glass for the painted window will cost 270*l*, and the necessary repairs to the stonework of the window, and the mosaic tiles, about 10*l*. We may also state that a painted window, which will cost about 150*l*, is to be placed in the south transept, to the memory of the late Rev. F. Bick, for about forty years vicar of the parish. This church is now undergoing internal restoration, and, it is hoped, will be enriched with other stained windows.

Neyland Church.—This church has just been adorned by a new east window, the work of Mr. H. Baker, of Colchester, which has been filled with painted glass, by Messrs. Baillie & Mayer, of London. The window is of the Decorated period, and contains five lower compartments, with tracery lights. In the centre opening are two groups under canopies, one of which is "The Trial of St. Stephen," and the other "The Stoning of St. Stephen." The four side openings each contain a group in medallion-shape on geometrical and mosaic background, enclosed within borders of purple and green flowers. The groups on the north side are "The Nativity," and "Christ bearing the Cross;" on the left side "The Rotomont," and "The Ascension." In addition to this window, a new stone step to the communion-table, with encaustic tiles, has been laid, and the walls have been re-stuccoed.

St. Edmund's, Salisbury.—Three windows in the south chancel aisle of this church have been filled with stained glass, the gift of the Rev. T. H. Tooke, formerly rector of the parish. The work has been executed by Messrs. Clayton & Bell, of London. The glass represents scenes in the life of Jesus, illustrating incidents of childhood; the aisle having been built for the use of Sunday-school children.

St. Mary's, Bloomsbury.—The new east window is the chancel of this church, the work of Messrs. Morris & Co., London, was not finished till the end of the year. It is a large window, and at the top of the window is a figure of our Lord, as the King of Glory, seated on a rainbow, surrounded by the angelic host, some of whom are holding a screen of crystals behind him. Immediately below, on a deep blue ground, is a seraph with wings of a rather dark ray. On the north and south sides respectively are angels with bright ruby wings, holding in their hands the sun and the moon. Below these are four angels with white wings on a blue ground like the rest, two playing on stringed instruments, one on pipes, and the remaining one singing from a scroll of music; ornaments in yellow stain are on all the draperies. In the canopy of the lower lights, dividing the tracery from the lower part of the window, are the four gates of the Celestial City, the New Jerusalem, with an angel over each gate. The walls are alike all round, and the dome in the centre, but priority is obtained in the grouping of the buildings, towers, and trees. The four lights in the lower part of the window are divided half-way down, thus making eight compartments, each of which is occupied by two figures of angels, archangels, apostles, and prophets in the upper half, and martyrs, kings, bishops, and virgins in the lower. This is a memorial window to some members of the Davis family. The cost of the window has exceeded 350*l*, and has been defrayed out of the donation of 1,000*l*, presented to the church last year by Mr. John Hale, of Gernsey, Chesham, whose wife is a member of the Davis family.

The Northern Architectural Students' Society.—On the 15th the members of this society held their annual fortnightly meeting. Mr. W. L. Newcombe, president, occupied the chair. Mr. Joseph Oswald read a paper upon "Domestic Architecture," with special reference to villa and suburban residences. The discussion which followed was introduced by Mr. J. H. Morton and the chairman.

Books Received.

Ernest George's Sketches, German and Swiss.
London: W. M. Thompson, Pall-mall, 1870.

HAVING completed a number of water-colour drawings during a sketching tour, the artist, an architect, made pen-and-ink sketches from them, and, with the aid of Cowell's anastatic process, now publishes actual transfers of them, forty-five in number, with brief descriptions. The views taken are in Aix-la-Chapelle, Nuremberg, Cologne, Würzburg, Coblenz, Prague, Bâle, Lucerne, Thunne, Bern, Lausanne, and Zurich, (where) and, if not particularly novel, are very picturesque and pleasing. Mr. George is evidently a ready sketcher, and has a good eye for the choice of a point of view. The sketches are too slight, but they make a pretty table-book, which will serve to illustrate and recall the German journey of many an ordinary traveller, and suggest to others how interesting they would find a similar trip.

English Country Houses: Forty-five Views and Plans of recently-erected Mansions, Private Residences, Parsonages Houses, &c.; with a Practical and Useful Guide to the Buildings. By WILLIAM WILKINSON, Architect. London and Oxford: James Parker & Co. 1870.

The object the author had in view in putting together these forty-five examples of Domestic Architecture was, he says, chiefly to assist those who may propose to build in determining the style and character of the proposed edifice, in deciding upon the materials to be employed, and the mode of executing the work, and as suggestive of various matters that deserve consideration. The buildings here represented, and which have all been executed from the designs of the author, range from residences costing 5,000*l*, or 6,000*l*, each, to cottages 30*l* each. Plans accompany each view, and some sensible and useful suggestions for persons not within reach of an architect, precede the illustrations. The elevations, though they have a strong family likeness, present considerable diversities, and serve to show how many combinations may be produced by the use of the same material, moulded chimney-shafts, and maligned windows.

A valuable feature of the book is that the actual cost of the majority of the buildings is given, together with what is found to be the price per foot cube, the cubical contents being calculated from the area of the floor line and the bottom of foundation, to midway between the plate and ridge of roof. Thus Wootton House, Oxfordshire, exclusive of the value of the walling stones, dog on the estate, comes to 5*l* 6*d*. per foot cube; Biggell House, same county, 6*l* 6*d*. per foot; the walling stones being dog and the lime burnt on the estate. A residence on Norham Manor, Oxford, walls of local red bricks and freestone dressings, comes out at 6*l*. 6*d*. per foot cube; and a smaller residence on Walton Manor, 5*l*. 6*d*. per foot. A farmhouse at Upton, the wall stones being quarried near the site, cost 4*l* 6*d*. per foot; and two other farmhouses and outbuildings, with walling of red bricks, 5*l*. 6*d*. per foot. The views have been drawn by Mr. J. W. Hallam, and, if a little crude, have the advantage of showing exactly what the architect means. Mr. Hallam being himself an architect.

Miscellaneous.

Public Works in India.—In the House of Commons Mr. Kinnaird asked whether the Viceroy of India had issued orders to stop further expenditure on public works, and whether such orders had been approved by the Home Government. Mr. G. Duff said no such orders had been issued. Last autumn the Government of India discovered that it had communicated to the Home Government too sanguine a view of its immediate financial position, and it found it necessary to make reductions in various branches, and among others that known as public works ordinary, meaning works which the Government paid for out of the Government funds. Mr. Duff then read an extract from a despatch, from which it appeared that the works to be paid for out of revenue would be four millions and a half; out of sums proposed to be borrowed, three millions and a half; and for railways guaranteed by the Government, two millions; making in all upwards of ten millions.

Water Supply.—The Slough Waterworks have been opened. Owing to want of a proper system of drainage, a want which may also shortly be supplied, the water-supply of Slough has hitherto been contaminated to such an extent as to seriously affect the health of the locality. The resident engineer of the new waterworks is Mr. Edward Becker, under whom the whole of the works have been carried out. The only outward visible sign of the progress of the works has been the erection of a tower at the rear of the Slough Police-station, some 75 ft. in height, with water-tanks at the summit, capable of containing 40,000 gallons, which would meet the wants of a much larger town than Slough, as the tank can be pumped full in twenty-five minutes, and the daily consumption would probably be considerably under 100,000 gallons. The water is, of course, at high pressure, and in case of fire it could be thrown over the highest building in Slough. The water is soft and pure. The cost of the works has been about 14,000*l.*, including the mains, which have already been laid throughout the town. The well from which the water is drawn has been sunk into the chalk formation 114 ft. below the surface. Some of the tanking work was done by the use of a pump under water.—The Liverpool Water Committee, after hearing a report from their engineer, have decided that in future the supply of water shall be limited to two hours daily, by which it is expected that a large annual saving will be effected.

Oxford Architectural Society.—The members of this society have, during the present term, made a series of excursions to various places of interest in the neighbourhood of Oxford; and on Saturday last a party of nearly fifty in number walked to Wytham, where they were hospitably received by the Rev. H. O. Cox, who conducted them over the church, &c. They then proceeded to the site where British remains have lately been discovered, and where the different graves, pile, &c., were pointed out by Dr. Rolleston, who explained the circumstances attending these discoveries. The party then proceeded, by the ruins of Godstow Nunnery, to Wolvercote. An evening meeting of the society was held in the Taylor Building, on Tuesday last, when Professor Westwood gave an account of some Russian ecclesiastical objects, which he exhibited, and Mr. R. F. Bigg-Wither, M.A., read a paper "On Iconography in Russia," in which he developed the history of the rise of the various schools of sacred art in that country, illustrated by a number of icons, Russo-Greek crosses, and various forms of the portable iconostasis, photographs of vestments, columns and photographic views of the exterior and interior of remarkable churches and icons.

Southampton Workhouse.—The proverbial white elephant of Slam could scarcely have been more troublesome to the king of that country than the new Poorhouse has been to the ratenayers of Southampton, says the local Independent. First, there was a contest whether there was a necessity for a new building. Then there was a sharp war as to whether the old obsolescent site should be retained. Then a contest, issuing in law, ensued as to who should be the architect. A second architect having been fixed upon, and the first compensated for his disengagement, the services of more lawyers were needed upon the point whether the builders were liable under their contract to do certain work, and it was decided by arbitration that they were not so liable. At last, through much tribulation, the building is obtained; but, behold, before it is paid for, we are gravely informed by the Commissioners in Lunacy that, despite all the approvals and disapprovals of the Poor-law Board, the lunatic wards are unfortunately placed and badly arranged, the yards attached being very small, and quite inadequate for the purposes of exercise, and not capable of enlargement.

Proposed Public Park at Sheffield.—The town trustees of Sheffield have under consideration a scheme for the provision of a public park, the funds for the establishment of which shall be derived from the large sum of money left to the town by the late Mr. Samuel Bailey. It is expected that the amount of Mr. Bailey's bequest will reach about 110,000*l.*, at least, and of this it is proposed to spend 30,000*l.* on the purchase and endowment of a considerable portion of land belonging to the Sheffield Water Company, and situate close by their supply reservoir, just outside the town, in a very pleasant and convenient neighbourhood.

The New National Gallery.—In the House of Lords Viscount Hardinge, in moving for a copy of the correspondence between the Office of Works and the architect respecting the design of the new building, said he had heard a report that Mr. Ayrton had *consp'd* Mr. Barry, and that he was contemplating a re-arrangement of the existing building. He trusted no attempt would be made to patch up or tinker the existing edifice. Earl Granville believed that the Chief Commissioner of Works only intended to design a few new pavilions. The Earl of Kimberley said he thought it unlikely that there would be any objection to lay the correspondence on the table when it was completed. Lord Redesdale hoped that before pulling down any more buildings the Government would cover those sites which had already been cleared. As far as he could learn, very little progress was making with the new British Office. Earl Granville said that the Government at present counted a great number of houses in the best parts of London; but that plan was both costly and inconvenient.

The New Abattoirs for Bradford.—The slaughter-houses about to be erected by the Bradford Corporation, and the works for which have been let, will stand at the north-west corner of the ground now being laid out as a site for a new market. The new abattoirs are Messrs. Lockwood & Mawson. The general plan embodies the principle of sections, each complete in itself, each of good working size, and containing all the appliances and requisites of the trade, while affording such suitable accommodation as will ensure humane treatment for the animals to be slaughtered. Each section will be 28 ft. in width, and will run from north to south. Entrances for cattle are provided in Egbert-street and Carroll-street. The arrangements may be doubled by the erection of a corresponding building on the east side of Carroll-street. The estimated cost of the four sections now about to be erected was 6,600*l.*, but the tenders have been let for 6,143*l.*

Bungerford.—It is finally settled to have a new Cox Exchange and Town-hall, and the old one will come down. A committee has been formed to obtain subscriptions, and Mr. Spoonhamland has subscribed 500*l.* Other sums have been promised or subscribed. The exchange will be built by shares. The new buildings are to cost 2,500*l.* It is intended to raise as much as possible by subscription, and to borrow the remainder, the trustees making themselves responsible for the money borrowed. Architects have been requested to send in plans for the approval of the committee.—A vote of 1,000*l.* has been accorded at the meeting of the shareholders of the Great Western Railway Company, for the erection of a new station at Hungerford. And at the same time a vote of 5,000*l.* for new sidings at Swindon station, and of 4,212*l.* for carriage sheds at Swindon, was granted.

Public Buildings in London.—The Council of the Society of Arts have appointed a committee to confer with the Chief Commissioner of Public Works, the Lord Mayor of London, and the Chairman of the Metropolitan Board of Works, with the view of establishing such harmonious action between the several authorities they represent, as may prevent the creation of public or quasi-public buildings which shall disfigure the metropolis.—Lord Elobe, on the House of Commons, has given notice that on going into committee of supply on the Civil Service estimates, he will move a resolution in accordance with the recommendation of the Committee of last year for the new public buildings in the metropolis, and requiring the deposit of plans and elevations, models and designs, at the office of the Commissioner of Works, in the same manner as railway companies are now compelled to deposit with the Board of Trade, and to move the necessary alterations in the standing orders.

Superiority of Ancient Architecture.—That was a triumphal appeal of an Irishman, a lover of antiquity, who, in arguing the superiority of the old architecture over the new, said,—"Where will you find any modern building that has lasted so long as the ancient?" And it is not such a ball as it looks.

Carlisle Bridge, Dublin.—We are glad to learn that there is now a fair prospect of the corporation taking up Mr. Geoghegan's admirable plan for the widening of Carlisle Bridge, and of thus conferring, at a trifling expense, a most valuable boon, to the citizens of Dublin.

Railway Sleeping Carriages.—Mr. Howison, of Glasgow, proposes to make use of the existing compartments of railway-carriages, his arrangement permitting them to be used either for sitting or sleeping, at the will of the passengers. Unless when used for sleeping, the compartments will present almost exactly their present appearance, and the sleeping arrangement will consist, in first-class carriages of one shelf, in second-class carriages of two shelves, placed at equal distances above the present seats, of equal breadth with them, and extending in the same direction. The arrangement, in short, similar to that of berths in ships; and the railway berths may be made equally, if not more, commodious. Under this system a first-class compartment could hold only four, and a second-class six, passengers.

Projected Cathedral in Liverpool.—The proposal to erect a cathedral in Liverpool has just been revived there. At the select vestry, the chairman, Mr. Churchward Turner said:—If the rector would waive his claim to 5,000*l.*, now in Glasgow, it was the intention of himself and his colleagues to propose at the next Easter vestry that the money be kept as a sort of nucleus of a fund for building a new parish church on the site of St. Peter's, and he had no doubt that the wealthy people of Liverpool would come out handsomely, and that they should have a church worthy of the town. He believed a movement was on foot to separate Liverpool from the diocese of Chester, and if it was successful they should have a Bishop of Liverpool as well as a bishop in Liverpool.

The New Church of St. Mark, Leicester.—The tender of Messrs. Osborne, Brothers, masons and builders, Leicester, having been accepted for the completion of the works connected with the building of the new church of St. Mark, in Belgrave-gate, they will be commenced forthwith. It is expected that the ceremony of laying the memorial stone of this church, and also that of St. Paul, now in the course of erection on the Dane Hills, by the same contractors, will be performed in a short period on the same day, by the Bishop of Peterborough. The contract for St. Mark's Church is about 11,000*l.*, and that for St. Paul's about 4,500*l.* The funds being somewhat low for carrying out the architect's design for the latter memorial church, the erection of the spire is not included in the contract. The two churches when complete will afford sittings for upwards of 1,600 persons.

An Extensive Foundry.—The block of buildings recently erected on the banks of the river at Bedford, and adjoining the Britannia Works, has been opened. Owing to the growth of Messrs. Howard's business, they were for a long time unable to produce a sufficient quantity of castings. They therefore determined to devote the present large foundry to the fitting and wrought-iron department, and to erect a new foundry on a much larger scale by the side of the old one. There are 35,000 square feet on the ground floor. There are four cupolas or furnaces capable of melting 300 tons per week and which are expected to be very shortly in full work. The internal and general arrangements were planned by Mr. James Howard, M.P., the erection being under the direction of Mr. Usher, architect, Bedford.

The Sewage of Dumfries.—An application has been made by a London company to the town council of Dumfries, through Provost Harkness, for a concession of the sewage of the town for conversion into manure. The proposal is that, so soon as the new sewerage is completed, they should be allowed to take the sewage to be conceded to the company for thirty years, on the following conditions:—That the sewage be treated by the process of the Native Guano Company; that the town receive 5 per cent. of the profits in the event of the experiment proving successful; and that if unsuccessful within six months after the commencement of the process, the agreement cease and determine. The matter has been remitted to a committee.

Monumental.—The commission for the Fanny memorial statue to be erected in the hall of the British Museum, has been placed in the hands of Mr. Foley.—The proposed memorial over the remains of Daniel De Foe, to be placed in Bunhill-fields burial-ground, will be of marble, and the memento itself will be 3 ft. square at the base, tapering to a height of 15 ft. It is being executed by Mr. Harcourt, the sculptor, and will be ready for fixture in May.

TO BE LET, on Lease, for a term of years, SEVERAL ACRES of LAND, suitable for MANUFACTURING PURPOSES, advantageously situated on the north bank of the river Tyne, about two miles from Newcastle-Tyne, and within a quarter of a mile from the N.E. Railway Station. The land is very fertile, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

FRESHFOLD BUILDING LAND, suitable for BUILDING, on the North-Eastern Railway, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

BUILDING GROUND, North-east, Haymarket, London. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

CHARTERHOUSE ESTATE.—Important PROPOSAL FOR BUILDING, near the Charterhouse, London. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

FRESHFOLD LAND, suitable in Horn-Lane, London. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

DARFILL WHARF, 36A, Belvedere Road, London. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

NEW ARCHITECTURAL MUSEUM, Westminster. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

BUILDING LAND TO BE LET FOR SMALL HOUSES, situated about half a mile from the two stations of the N.E. Railway, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO CONTRACTORS, SAW-MILL OWNERS, BUILDERS, and OTHERS.—To BE LET, a small workshop, suitable for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

SPACIOUS WATERSIDE PREMISES, situated in Rotherhithe Road, London. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

IMPORTANT FRESHFOLD BUILDING SITE FOR SALE, or TO BE LET, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

UPPER FOOTING PARK, five minutes' walk from the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BUILDERS.—To BE LET, a most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

EXTENSIVE WHARFAGE TO BE LET, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BUILDERS and OTHERS.—Several very eligible PLANTS of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

BEL-ZE PARK.—TO BUILDERS and OTHERS.—Several very eligible PLANTS of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO CARPENTERS and OTHERS.—FOR SALE, a most eligible CARPENTER, in a good situation at the end of London, near the N.E. Railway Station. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BUILDERS.—DULWICH ESTATE, near the Station, in the County of Surrey. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

EAST SHEEN, near Richmond Park.—TO BUILDERS.—To BE LET, a most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

LEADENHALL STREET.—FRESHFOLD BUILDING LAND, suitable for BUILDING, on the North-Eastern Railway, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

VALUABLE BUILDING LAND TO BE LET, in good position, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

MANUFACTORY TO LET, with STEAM POWER, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

CITY OF LONDON.—Area, 2,798 feet.—TO BE LET, a most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

BRICKFIELD TO LET, with Nine Stalls, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

FRESHFOLD BUILDING LAND TO BE LET, in good position, near the Station, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TWICKENHAM.—TO BUILDERS and OTHERS.—Several very eligible PLANTS of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

CITY OF LONDON.—TO BE SOLD or TO BE LET, a most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BUILDERS and CAPITALISTS.—The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BE LET, on Lease, very extensive PREMISES, situated in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

VALUABLE BUILDING LAND in the CITY OF LONDON TO BE LET on LEASE.—The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BUILDERS and SPECULATORS.—A most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO SPECULATORS and OTHERS.—Several very eligible PLANTS of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

TO BE DISPOSED OF, with immediate POSSESSION, a most eligible PLANT of LAND, in the County of Northumberland. The land is situated on the north bank of the river Tyne, and is well adapted for the purpose of a coal mine, or for any other purpose. For particulars, apply to Mr. J. B. BROWN, at the Office of the N.E. Railway Station, Newcastle-Tyne.

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ft. 738 ft. 744 ft. 750 ft. 756 ft. 762 ft. 768 ft. 774 ft. 780 ft. 786 ft. 792 ft. 798 ft. 804 ft. 810 ft. 816 ft. 822 ft. 828 ft. 834 ft. 840 ft. 846 ft. 852 ft. 858 ft. 864 ft. 870 ft. 876 ft. 882 ft. 888 ft. 894 ft. 900 ft. 906 ft. 912 ft. 918 ft. 924 ft. 930 ft. 936 ft. 942 ft. 948 ft. 954 ft. 960 ft. 966 ft. 972 ft. 978 ft. 984 ft. 990 ft. 996 ft. 1002 ft. 1008 ft. 1014 ft. 1020 ft. 1026 ft. 1032 ft. 1038 ft. 1044 ft. 1050 ft. 1056 ft. 1062 ft. 1068 ft. 1074 ft. 1080 ft. 1086 ft. 1092 ft. 1098 ft. 1104 ft. 1110 ft. 1116 ft. 1122 ft. 1128 ft. 1134 ft. 1140 ft. 1146 ft. 1152 ft. 1158 ft. 1164 ft. 1170 ft. 1176 ft. 1182 ft. 1188 ft. 1194 ft. 1200 ft. 1206 ft. 1212 ft. 1218 ft. 1224 ft. 1230 ft. 1236 ft. 1242 ft. 1248 ft. 1254 ft. 1260 ft. 1266 ft. 1272 ft. 1278 ft. 1284 ft. 1290 ft. 1296 ft. 1302 ft. 1308 ft. 1314 ft. 1320 ft. 1326 ft. 1332 ft. 1338 ft. 1344 ft. 1350 ft. 1356 ft. 1362 ft. 1368 ft. 1374 ft. 1380 ft. 1386 ft. 1392 ft. 1398 ft. 1404 ft. 1410 ft. 1416 ft. 1422 ft. 1428 ft. 1434 ft. 1440 ft. 1446 ft. 1452 ft. 1458 ft. 1464 ft. 1470 ft. 1476 ft. 1482 ft. 1488 ft. 1494 ft. 1500 ft. 1506 ft. 1512 ft. 1518 ft. 1524 ft. 1530 ft. 1536 ft. 1542 ft. 1548 ft. 1554 ft. 1560 ft. 1566 ft. 1572 ft. 1578 ft. 1584 ft. 1590 ft. 1596 ft. 1602 ft. 1608 ft. 1614 ft. 1620 ft. 1626 ft. 1632 ft. 1638 ft. 1644 ft. 1650 ft. 1656 ft. 1662 ft. 1668 ft. 1674 ft. 1680 ft. 1686 ft. 1692 ft. 1698 ft. 1704 ft. 1710 ft. 1716 ft. 1722 ft. 1728 ft. 1734 ft. 1740 ft. 1746 ft. 1752 ft. 1758 ft. 1764 ft. 1770 ft. 1776 ft. 1782 ft. 1788 ft. 1794 ft. 1800 ft. 1806 ft. 1812 ft. 1818 ft. 1824 ft. 1830 ft. 1836 ft. 1842 ft. 1848 ft. 1854 ft. 1860 ft. 1866 ft. 1872 ft. 1878 ft. 1884 ft. 1890 ft. 1896 ft. 1902 ft. 1908 ft. 1914 ft. 1920 ft. 1926 ft. 1932 ft. 1938 ft. 1944 ft. 1950 ft. 1956 ft. 1962 ft. 1968 ft. 1974 ft. 1980 ft. 1986 ft. 1992 ft. 1998 ft. 2004 ft. 2010 ft. 2016 ft. 2022 ft. 2028 ft. 2034 ft. 2040 ft. 2046 ft. 2052 ft. 2058 ft. 2064 ft. 2070 ft. 2076 ft. 2082 ft. 2088 ft. 2094 ft. 2100 ft. 2106 ft. 2112 ft. 2118 ft. 2124 ft. 2130 ft. 2136 ft. 2142 ft. 2148 ft. 2154 ft. 2160 ft. 2166 ft. 2172 ft. 2178 ft. 2184 ft. 2190 ft. 2196 ft. 2202 ft. 2208 ft. 2214 ft. 2220 ft. 2226 ft. 2232 ft. 2238 ft. 2244 ft. 2250 ft. 2256 ft. 2262 ft. 2268 ft. 2274 ft. 2280 ft. 2286 ft. 2292 ft. 2298 ft. 2304 ft. 2310 ft. 2316 ft. 2322 ft. 2328 ft. 2334 ft. 2340 ft. 2346 ft. 2352 ft. 2358 ft. 2364 ft. 2370 ft. 2376 ft. 2382 ft. 2388 ft. 2394 ft. 2400 ft. 2406 ft. 2412 ft. 2418 ft. 2424 ft. 2430 ft. 2436 ft. 2442 ft. 2448 ft. 2454 ft. 2460 ft. 2466 ft. 2472 ft. 2478 ft. 2484 ft. 2490 ft. 2496 ft. 2502 ft. 2508 ft. 2514 ft. 2520 ft. 2526 ft. 2532 ft. 2538 ft. 2544 ft. 2550 ft. 2556 ft. 2562 ft. 2568 ft. 2574 ft. 2580 ft. 2586 ft. 2592 ft. 2598 ft. 2604 ft. 2610 ft. 2616 ft. 2622 ft. 2628 ft. 2634 ft. 2640 ft. 2646 ft. 2652 ft. 2658 ft. 2664 ft. 2670 ft. 2676 ft. 2682 ft. 2688 ft. 2694 ft. 2700 ft. 2706 ft. 2712 ft. 2718 ft. 2724 ft. 2730 ft. 2736 ft. 2742 ft. 2748 ft. 2754 ft. 2760 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ft. 6096 ft. 6102 ft. 6108 ft. 6114 ft. 6120 ft. 6126 ft. 6132 ft. 6138 ft. 6144 ft. 6150 ft. 6156 ft. 6162 ft. 6168 ft. 6174 ft. 6180 ft. 6186 ft. 6192 ft. 6198 ft. 6204 ft. 6210 ft. 6216 ft. 6222 ft. 6228 ft. 6234 ft. 6240 ft. 6246 ft. 6252 ft. 6258 ft. 6264 ft. 6270 ft. 6276 ft. 6282 ft. 6288 ft. 6294 ft. 6300 ft. 6306 ft. 6312 ft. 6318 ft. 6324 ft. 6330 ft. 6336 ft. 6342 ft. 6348 ft. 6354 ft. 6360 ft. 6366 ft. 6372 ft. 6378 ft. 6384 ft. 6390 ft. 6396 ft. 6402 ft. 6408 ft. 6414 ft. 6420 ft. 6426 ft. 6432 ft. 6438 ft. 6444 ft. 6450 ft. 6456 ft. 6462 ft. 6468 ft. 6474 ft. 6480 ft. 6486 ft. 6492 ft. 6498 ft. 6504 ft. 6510 ft. 6516 ft. 6522 ft. 6528 ft. 6534 ft. 6540 ft. 6546 ft. 6552 ft. 6558 ft. 6564 ft. 6570 ft. 6576 ft. 6582 ft. 6588 ft. 6594 ft. 6600 ft. 6606 ft. 6612 ft. 6618 ft. 6624 ft. 6630 ft. 6636 ft. 6642 ft. 6648 ft. 6654 ft. 6660 ft. 6666 ft. 6672 ft. 6678 ft. 6684 ft. 6690 ft. 6696 ft. 6702 ft. 6708 ft. 6714 ft. 6720 ft. 6726 ft. 6732 ft. 6738 ft. 6744 ft. 6750 ft. 6756 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ARCHITECTURAL INTERIOR DECORATION,
C E I L I N G F L O W E R S ,
 PANELS, DOOR HEADS, CORNICES, TRUSSES, CAPS, &c. IN CARTON PIERRE, PAPIER MACHE, AND COMPOSITION.
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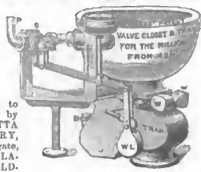
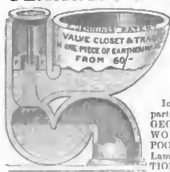


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 And Manufacturers of all Plumbers’
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4 inch, 10. 6 inch, 10. 8 inch, 10. 10 inch, 10. 12 inch, 10. 14 inch, 10. 16 inch, 10. 18 inch, 10. 20 inch, 10. 22 inch, 10. 24 inch, 10. 26 inch, 10. 28 inch, 10. 30 inch, 10. 32 inch, 10. 34 inch, 10. 36 inch, 10. 38 inch, 10. 40 inch, 10. 42 inch, 10. 44 inch, 10. 46 inch, 10. 48 inch, 10. 50 inch, 10. 52 inch, 10. 54 inch, 10. 56 inch, 10. 58 inch, 10. 60 inch, 10. 62 inch, 10. 64 inch, 10. 66 inch, 10. 68 inch, 10. 70 inch, 10. 72 inch, 10. 74 inch, 10. 76 inch, 10. 78 inch, 10. 80 inch, 10. 82 inch, 10. 84 inch, 10. 86 inch, 10. 88 inch, 10. 90 inch, 10. 92 inch, 10. 94 inch, 10. 96 inch, 10. 98 inch, 10. 100 inch, 10. 102 inch, 10. 104 inch, 10. 106 inch, 10. 108 inch, 10. 110 inch, 10. 112 inch, 10. 114 inch, 10. 116 inch, 10. 118 inch, 10. 120 inch, 10. 122 inch, 10. 124 inch, 10. 126 inch, 10. 128 inch, 10. 130 inch, 10. 132 inch, 10. 134 inch, 10. 136 inch, 10. 138 inch, 10. 140 inch, 10. 142 inch, 10. 144 inch, 10. 146 inch, 10. 148 inch, 10. 150 inch, 10. 152 inch, 10. 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10. 440 inch, 10. 442 inch, 10. 444 inch, 10. 446 inch, 10. 448 inch, 10. 450 inch, 10. 452 inch, 10. 454 inch, 10. 456 inch, 10. 458 inch, 10. 460 inch, 10. 462 inch, 10. 464 inch, 10. 466 inch, 10. 468 inch, 10. 470 inch, 10. 472 inch, 10. 474 inch, 10. 476 inch, 10. 478 inch, 10. 480 inch, 10. 482 inch, 10. 484 inch, 10. 486 inch, 10. 488 inch, 10. 490 inch, 10. 492 inch, 10. 494 inch, 10. 496 inch, 10. 498 inch, 10. 500 inch, 10. 502 inch, 10. 504 inch, 10. 506 inch, 10. 508 inch, 10. 510 inch, 10. 512 inch, 10. 514 inch, 10. 516 inch, 10. 518 inch, 10. 520 inch, 10. 522 inch, 10. 524 inch, 10. 526 inch, 10. 528 inch, 10. 530 inch, 10. 532 inch, 10. 534 inch, 10. 536 inch, 10. 538 inch, 10. 540 inch, 10. 542 inch, 10. 544 inch, 10. 546 inch, 10. 548 inch, 10. 550 inch, 10. 552 inch, 10. 554 inch, 10. 556 inch, 10. 558 inch, 10. 560 inch, 10. 562 inch, 10. 564 inch, 10. 566 inch, 10. 568 inch, 10. 570 inch, 10. 572 inch, 10. 574 inch, 10. 576 inch, 10. 578 inch, 10. 580 inch, 10. 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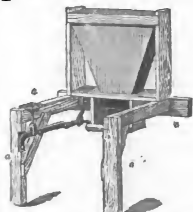


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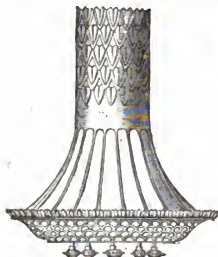
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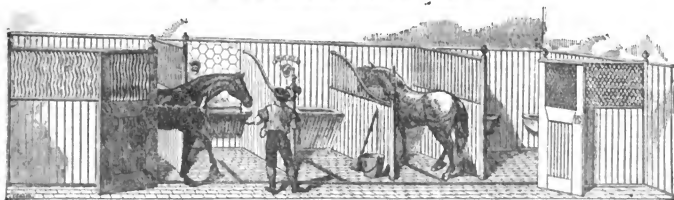
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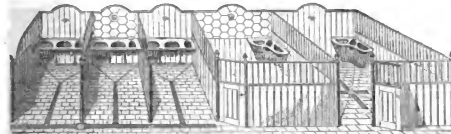
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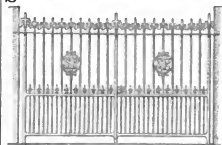
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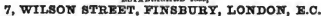
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The Builder.

VOL. XXVIII.—No. 1417.

Our Communication with the Continent.

O METHOD of bringing a scientific question before the tribunal of enlightened public opinion can be more thoroughly respectable than a lecture at the Royal Institution. Not only may it be regarded as a fair and open challenge to the intellectual chivalry of the day,—a learned tournament, graced with the presence of "store of ladies, whose bright eyes rain influence," if they do not "judge the prize"—but it may further be taken as evidence that the lecturer has so far made out a *prima facie* claim to respect as to have been awarded the privilege of occupying one of the most select of the theatres of Science. His bill has passed the grand jury of



the Institution; and he comes forward, not to open the pleadings, but to speak to evidence, and to claim a verdict.

The lecturer, however, does not hold a position of unequalled advantage. He shares the dangerous temporary immunity of the preacher. He is not exposed to the cross-fire of debate. He thus becomes liable to a temptation, which frequently proves irresistible, to rely on what is telling, rather than on what is true. Safe from any oral criticism, he may presume too much on a security which proves delusive when his arguments are reviewed with the impartial investigation of leisurely criticism. The applause of the theatre of the Institution are at once more transient, and of far less substantial value, than the deliberate assent of the scientific press.

We make these remarks with the intention of counselling to Mr. Bateman the largest tribute of respect that is consistent with a mature conviction of the entire impracticability of his scheme for crossing the Straits of Dover by means of a built iron tube laid on the floor of the Channel. That he has given much attention to the subject, that ingenuity of a high order has been displayed, that many obstacles have been foreseen, and, to a great extent, grappled with,—all this we fully admit; but as to the substantial merit of the scheme, we are compelled to come to the conclusion, not merely that it is not proven, but that the result of the trial can only be a non-suit.

Stimulated, most probably, by the unexpected and very gratifying success of Mr. Barlow's miniature subway under the Thames, more than one engineer of skill and of more or less experience has turned his attention, during the

present slack tide of professional occupation, to a revision of the various schemes for bridging the Straits of Dover.

With regard to one of these schemes, which, during the past year, was put forward as a sort of forlorn hope, we fear that we must plead guilty to the charge of having exploded the magazine. To our first examination of the subject, in the *Builder* of September 18th, 1869, the engineer replied in a letter to the *Times*, which laid him open to so complete a sifting of the subject, in our number for September 25th, 1869, that the scheme seems to have faded from the public mind, and made its way to that limbo which is peopled by the innumerable ghosts of still-born inventions.

We hold the present state of our communication with the Continent of Europe to partake of the nature of a scandal, both to our scientific acquirements and to our commercial energy. Men fully acquainted with the engineering of America consider that so imperfect a mode of intercourse would not be endured for six months by the active and foreseeing race which has so recently bridged the desert with an iron roadway. And, regarding our own experience alone, it is inexplicable why the sixty-four miles' passage from Holyhead to Dublin should have attracted so much more successful scientific effort, and should, at the present moment, be in a state so much more worthy of a great postal line of communication, than the twenty-two to twenty-six miles of water-way between Dover harbour and Cape Griznez.

Numerous projects, more or less serious in their form, have been suggested from time to time for the improvement of our communication with France. A French engineer, M. Mathieu, submitted a plan for a tunnel to Napoleon Bonaparte, when first consul. In 1856 a scheme was formed for the piercing of a tunnel, to be worked from shafts opened in thirteen artificial islands, with which it was proposed to encumber the Channel. Mr. Low proposed, and Mr. Hawkshaw supported, a scheme for a tunnel through the grey or lower chalk, from a spot half a mile west of the high light of the South Foreland, to one about four miles west of Calais. The upper surface of the grey chalk is about 175 ft. below high water on the English coast, and about 100 ft. lower on the French shore. The sub-marine distance of the line selected was to be about twenty-two miles, without any intermediate shaft.

Mr. Remington, in 1865, published a yet more formidable plan. With the view of avoiding the danger of faults and springs in the chalk, he proposed to pierce the Wealden beds lying between Dungeness and Cape Griznez. The length actually beneath the water, according to his idea, would be 26 miles, but it was contemplated that an intermediate or insular shaft should be put down on the shoal or submerged island, called the Ridge. The cross section of this tunnel was to be 25 ft. by 30 ft. The above-named schemes for what may properly be termed tunnelling the Channel are the only two in which any serious degree of attention has been paid to the geological indications which science can as yet grasp; and the conclusions arrived at are, as will be observed, contradictory.

With the aim of avoiding on the one hand the practical mining dangers natural to operations in the chalk below the sea, and of shunning on the other hand the increased cost, both of depth and of length, involved by attempting to follow the level of the Wealden, suggestions have from time to time been thrown out for the fabrication of a metallic tube, either of wrought or of cast iron, or of iron lined with brickwork.

A curious instance of the freaks which fancy will play, even in the case of men by no means unacquainted with the practical manipulation of iron, is afforded by a little pamphlet on an "International Floating Tunnel," which was published

last year by Mr. E. W. Young. A tube of boiler plate, $\frac{1}{2}$ in. thick, "lined outside" (it would seem that the projector is an Irishman) with a layer of concrete 1 ft. 6 in. thick, and "furnished with ribs encircling it at every 6 ft. in length," in order to "give stiffness, and serve to prevent the concrete from breaking away," was to be formed "in short sections of, say, from 200 ft. to 300 ft. in length." These were to be floated into position, and lowered "into place at a certain depth below the surface of the water, where, the joints being made good by divers, they would form one continuous tube across the Channel."

"The tube being buoyant, would be held down to the required depth by mooring cables of iron attached to blocks of *iron* of sufficient weight. Its buoyancy would be such that the passage of heavy trains would have no effect upon its position. The tube would be fixed at such a depth below the surface as to be practically unaffected by the waves." It is not clearly stated what resistance it would oppose to the set and run of the great tidal movement. "It could not be raised vertically without lifting the anchors, or breaking the mooring-cables, nor depressed without overcoming its buoyancy." It could not move laterally without breaking away from the inclined mooring-cables, and therefore it would be stable under all circumstances."

This wonderful modernisation of the old idea of Mahomed's coffin would have the further advantage that "ventilation would be secured by means of lighthouses placed half a mile apart along the tube. These lighthouses would be supported from the bottom of the sea by piers formed of clusters of cylinders filled with concrete." They would, no doubt, be taken under the special protection of the Admiralty, and would be objects of loving reverence to all those who went down to this part of the sea in ships. They might also be furnished with life-boys, and the watchmen who tended the lights would be able to communicate freely with one another by an electric telegraph through the tube!

Mr. Young has unfortunately omitted to state how it is that certain objections, which he rightly perceives to be fatal to the schemes of several of his brother projectors, have no force against his own. Thus he tells us, in italics, that a tube if laid at the bottom of the Channel, "in case of accident, could not be repaired." The facility of repairs in the case of a floating tube would scarcely seem to be much greater; while the liability to accident is certainly more obvious in mid-channel than on the bottom of the sea. Again, Mr. Young objects to the extreme difficulty of laying a sub-aqueous tube, because divers cannot work with safety at a depth of above eleven or twelve fathoms, while the Straits are thirty fathoms deep in parts. How the mooring-anchors, or blocks of *iron*, are to be satisfactorily fixed and attached to the tube in those deeper portions of the sea, or indeed how the diving process is to be carried on at all, *ex pleine mer*, we are not told. We regret not to have time to linger longer with Mr. Young, as we confess to thinking his company more amusing than that of some of his competitors. He only asks for nine millions and a quarter sterling for 211 miles of tube.

While Mr. Young would persuade his tube to float at "a certain depth," Mr. Chalmers would have his to crawl, like a hermit crab, over the floor of the Channel. He proposed, in 1866, to construct two strong iron tubes, cased with timber and lined with brick, from shore to shore on the bottom of the Channel. Three ventilating-shafts were to be provided, one in mid-channel and one about a mile from either shore. The tubes were to be made in 300 ft. or 400 ft. lengths, and united under water. It was the expectation of Mr. Chalmers that the set of the tide would cause such a deposit as to bury his tube when in place, under an embankment 40 ft. high, and from 40 ft. to 120 ft. below low-water level.

Mr. Claimers only asked for three years of time, and for twelve millions of money.

Mr. Marsden proposed, in April last (probably on the first day of that month), a somewhat similar scheme. He gave up, however, the idea of marine shafts, and contemplated ventilation by means of air-pumps. He also proposed to form a trough at the bottom of the Channel, by the agency of divers, and to puddle the same with clay, for the more comfortable bedding of the tube. Mr. Marsden's plan would, no doubt, present many advantages, if he could hit upon a convenient method of pumping the Channel dry during the laying and puddling of his tube; an operation which can hardly be supposed to be covered by the exact and modest estimate of 12,260,000.

Mr. Bateman, realising the immense practical difficulties attendant on submerging work in the open sea, and at depths involving a pressure of six atmospheres, has proposed the construction of a tube which shall be elongated and fixed entirely from within. It is this project to which we refer as having been recently brought forward at the Royal Institution.

The colleague of Mr. Bateman in this scheme, and the projector of the method which is proposed to adopt, is M. Julien J. Rivié, an Austrian engineer. The original idea of Sir M. I. Brunel, that of an iron shield, under the protection of which the main work of the tunnel should be carried on, is adopted by these engineers under the name of a "bell." This bell is a chamber of cast iron, 8 in. thick, 80 ft. long, and 18 ft. in internal diameter. The interior of this bell is to be bored true, like a steam cylinder. A smaller tube, 4 in. thick, and 13 ft. in clear internal diameter, is to be built together in segments within this shield. External flanges on this permanent tube are to be constructed so as to fit with air-tight accuracy in the interior of the bell. These diaphragms will be at such distance apart that always three, and occasionally four, will be contained within the 80 ft. chamber. As each ring is completed, the shield is to be pushed ahead by means of hydraulic pressure. It is estimated that the resistance will average about 1,600 tons, and that the propulsive force will amount to 4,000 tons. Thus the bell is expected to slide over the more closely-fitting diaphragms, and length after length is to be fitted, under protection of the shield, until the whole width of the Channel is crept under by an impervious tube.

It is proposed to work the hydraulic machinery at the face from accumulators on shore. Fresh air is to be supplied to the workmen by steam-pumping apparatus, as fired on the shore. As to the mechanical difficulty of transmitting either hydraulic or pneumatic pressure for a distance of twenty miles through a series of pipes, laid within the one permanent 13-ft. tube, through which the workmen will have to be carried back-wards and forwards, and the water accumulating from condensation and from leakage must be carried off,—it is obvious that we have little or no experience to guide us. The maintenance of a constant strain of such formidable magnitude, transmitted through a series of jointed pipes gradually increasing in length to the whole distance, is a dynamical problem as to the solution of which we may be said to be entirely without precedent. The mere statement of the conditions is alarming.

It is the less necessary, however, to enter into the details of a discussion,—as far, at all beyond the limits of practice,—as the project, as events, as the past and the present are concerned,—because there is some consideration which, to any prudent man, is wholly conclusive on the subject. Let us admit that Mr. Bateman could succeed, for eight millions of money, in pushing forward his blind bell over all intervening obstacles. Let us suppose that each of the 11,000 annular diaphragms performs faithfully its allotted work, allowing the well-bored chamber to slide steadily forward, and to leave behind it joint after joint in perfect order. Let us admit that each of the same number of stuffing-boxes is required in its fitting, and that the screw pillars which pass through each go down with a will, and nail the lengthening tunnel, joint after joint, firmly to the bottom of the Channel. Let us suppose that this hydraulic mains and junctions hold their own; that the pneumatic apparatus works at fifteen or twenty miles' distance from the shore as well as at the end of some hundred feet; that all goes forward like a dream; and that the miners come out into open air on French territory. Still there remains the undeniable fact that the

whole of this enormous toll lies at every moment, and will lie at every moment, at the mercy of a few barrels of gunpowder. A torpedo of explosive power sufficient to blow to pieces a cast-iron tube of 4 in. thick, could at any moment knock the whole affair on the head! War, mischief, even what people call accident, might at any moment induce the destruction of a portion of the submerged pipe; and with one effectual blast all the work would be rendered useless. Who would find twelve millions of money, or even eight millions of money, in face of such a risk as this?

It is, perhaps, unnecessary, after what we have already said to enter any further into the question of continuous submarine railway communication with the Continent. We come naturally to the next suggestion,—that of a steam ferry. The practicability and the advisability of such an arrangement had been accepted, in our judgment, long before the scheme was broached by Mr. Fowler.

That engineer has brought to bear upon it large experience, great shrewdness, and abundance of practical common sense. It would be difficult to select, among living engineers, a more sagacious adviser. But we are far from being prepared to admit that in the drawings and descriptions which have recently been published, we can have the matured scheme of Mr. Fowler, or the satisfactory outcome of the engineering science of the day. We must refer to one or two details to explain our meaning.

The unit of Mr. Fowler's plan, or of any plan for a steam ferry, must be the ferry-boat. The size of this will be the main determining element of the cost of the scheme. Depth and area of basins, length of piers, position and means of access to harbours, all will be modified in conformity with the dimensions of the steamers. Very much, with this, but the cost of every detail of port and harbour will be directly affected by the same condition. The engineer, therefore, has every inducement to make his boats as small as he possibly can while securing satisfactory results.

On the other hand, the one main desideratum of the passage is the avoidance of sea sickness. Even speed is a secondary consideration. Looking at the total distance between London and Paris, the saving of half an hour or of an hour in the actual transit of the Channel is, it would seem, a slight point. If the present journey of hours can be shortened into nine, it would, of course, be desirable to make the improvement; if the cost of so doing were not disproportionate. But whether this saving be effected by land, or by sea, or by greater facility of transshipping, matters little to the passenger. What does matter to him, is, to avoid the disagreeable effects of finding himself sick, and to avoid the abominable discomfort of turning out of a snug carriage, exposing himself to the inclemencies of the weather, perhaps in the middle of the night, and scrambling down a wet platform to enter an intolerably-smelling vessel. This is what ninety-nine passengers out of a hundred dread.

Now two methods of effecting this ready and comfortable communication are practicable. One is to build such a class of steamers (somewhat similar to those on the Holyhead station), and to arrange such basins and stages, on either side of the Channel, as shall allow the feeblest and most timid passenger to step, by a few yards of covered way, from the carriage in which they left London, to the deck of the steamer, and from the deck of the steamer to the carriage bound for Paris. A slip road, to cover both the steamer and the stage, and hydraulic lift, to give independence of the tide, are the main requisites of this method, and the boats would be most available if built to cut through the water at extreme speed.

The other method, which we do not doubt will one day or another be adopted, is to construct ferry-boats capable of taking a portion of the train on board, so that passengers, for a small extra charge, would have the choice of not leaving the carriage at all. This is the plan contemplated by Mr. Fowler.

In this case, however, we think that speed of passage must to some extent be sacrificed to stability and freedom from movement in the vessel. We do not think that a beam of 57 ft., which is the dimension proposed by Mr. Fowler, will be adequate to free the boats from a very serious rolling motion in the Channel. They will have to encounter there a beam of motion, the more formidable troughs of the Atlantic the rolling of the *Great Eastern*, in spite of her extreme width of 80 ft., was painfully felt, although

the pitching motion was almost entirely counteracted by her length of some 580 ft. For a vessel built not to cut through, but to stride over, the waves of the Channel, it would be necessary to allow a height from the water-line to the top of the bulwarks of 24 ft. or 25 ft., and this would seem to involve a beam of upwards of 70 ft. Again, the vessels at present contemplated are shown without keels, or any distinct arrangement for steering. As the double skin of iron is distinctly drawn in section, the flat bottom can hardly be a mere oversight. The large roofs, which are shown as covering the berth of the steamer, form an item of expense which is hard to reckon.

We cannot, therefore, avoid the conclusion that the vessels at present proposed are neither one thing nor the other. They are not built to cleave the sea, like an arrow or an auk, as on the Holyhead passage. They are not large enough to glide over the waves of the angry sea, as the *Great Eastern* might do in the Channel, but as even she is too narrow to do in the Atlantic. And as all the details of harbourage must be calculated after the dimensions of the ferry-boats, we are of opinion that the scheme of Mr. Fowler demands much careful review before we can accord it that approval which we consider that it may ultimately claim.

With regard, then, to the construction of any continuous railway communication with France either over, under, or through the sea, we cannot admit that a serious question has yet arisen.

That we are right to wait a few millions of money should be forthcoming in order to attempt the construction of a work which would be hazardous alike in execution, in maintenance, and in operation, is more than improbable. In the present state of the public mind, it is only necessary to mention the subject to excite a host of practical objections to such a project. Mere minute investigation may be deferred until some chance of the grave discussion of the subject shall actually occur.

For the alternative plans of rapid passage-boats, or of steady, nonrolling ferry-boats, there is room for momentary discussion. The immediate adoption of the former would not necessarily exclude the subsequent completion of the latter. But the essential point is, that so very large outlay should be encountered until the subject is thoroughly wrought out. If we build rapid passenger-boats, we can always make use of them in one place or another; but if we build large ferry-boats, with piers, basins, stages, and roofs to fit, and then find that they do not give us what we require, we shall waste both our time and our resources. We are far from saying that the present project is a failure, or that we are at the end of a pier; but yet, nautical experience is a distinct branch of knowledge. Steadiness of beam and instant obedience to the helm are qualities more necessary for the Channel ferry than actual speed. We have the means, provided by the large expenditure on the *Great Eastern* and other vessels, of obtaining very definite information on these essential points.

It is of great importance that we should avail ourselves of these facilities for actual experiment. Let us first decide on the requisite details of the ferry-boat. Let us put on the station a vessel that, with railway-carriage actually on board, will ply backwards and forwards over the Straits of Dover independently of weather. When we have once done this, the shore part of the communication can be adjusted without risk. No hesitation will be felt as to the propriety of the project. The passenger, who at once now actually crosses the Channel are enough to pay for a very perfect and costly accommodation; our only fear is, that if we do not fulfil the main requisites of the case in the first instance, the cost will be indefinitely increased. Let us not commence a performance of a full meeting of the work, with our eyes open, and being certain as to what we are about.

Proposed Bridges at Grimsby.—The plans of a proposed scheme of the Grimsby Corporation for the improvement of Grimsby, which are divided by the railway, by a foot-bridge over the line from Railway-street to New Market-place, and for continuing that line of communication to the corporation estate in the West Marsh, by a bridge for general traffic over the old dock at the Freeport-wharf, have been laid before a full meeting of the corporation, presided over by Mr. Sarré, engineer to the Manchester, Sheffield, and Lincolnshire Railway Company.

FRENCH SUBURBAN VILLAS.

UNDER this title Mr. W. H. Pictou recently read a paper at the Liverpool Architectural Association, suggested, as he said, by Mons. Cécile Daly's "Architecture Privée sous Napoléon III.

Mr. Pictou said at starting,—No branch of the architect's profession excites more interest amongst the public at large than the planning and designing of residences. For one person who would watch with interest the progress of a great public building, fifty would study the arrangements of a new house and envy him minutely all its details. Everybody has a word to say here. The patron complains, after eternally limiting the cost, if he does not get everything in the way of accommodation which he has set his heart on; the lady upbraids if her beautiful ideal in the number of pantries and closets is not provided, and even the servants take your name down in every smoky chimney as a defective drain, while for some of these matters the architect is as innocent as a babe unborn. Seeing that such is the case, it seriously behoves all architects who wish to achieve success in this department of our art to welcome every hint which may be derived from any source, and amongst others from a study of the houses of our Continental friends.

I am quite aware that the conditions which govern the designs of residences in France are different in many respects from what they are in England. But making all due allowance for differences of climate and habit, I think there will still be much remaining that we may learn.

The lecturer then reviewed the principal designs which were before the meeting. Speaking of one wherein the architect had shown no anxiety to keep his work in accordance with any given style, he said,—

The detached chimney stalks have a very weak effect, jutting up from the cornice and not indicated in any way below. Amongst the many hints derived from the Gothic, it is strange that the architect did not think of expressing them more distinctly. These drawbacks apart, there is very considerable merit in the design, and now for what is excellent about it. The wings have buttresses at the angles, starting under the string-course, and carried down to one set-off only to the ground. I can see no reason whatever why our Gothic friends should monopolise this useful feature. In this case it gives stability to the corner of the wing, and also widens out the side of the building to receive the conservatory, to which it also gives a catch. Looking generally over the front, it will be seen that while the pediments over the centre and turret windows, the main cornice and round-arched windows are Italian in style, the coupled windows, the dormers in the centre of front, and the eaves above the strings, and many of the mouldings, are perfectly Gothic in feeling.

On this I submit that the French has not been unsuccessful. Our French brethren display more courage than we in the architectural struggle after beauty. Why is this? It is certainly not because they do not understand the styles in their purity, for no nation in Europe has produced finer examples of representative buildings in all the known types of the art. It is not that they are careless about harmony in such matters, and do not care how heterogeneous the elements are which they heap together, provided only they create an effect; for all the details of their buildings show the most careful and scrupulous study which will stand the test of minute examination. I suspect that there is a deeper and a better cause than either of these. I believe that their art education has been carried to such a high pitch that they have become thoroughly grounded in the principles of beauty; and, having reached a higher level in the art, they breathe more freely the liberal air. They refuse any longer to be tyrannised over by any style, and their art for them.

"He controverts everywhere,
Nor cares to fix itself to form."

The following were the suggestions arrived at:—

1. I would impress upon our student members the great importance of careful planning. The minutest matters become great in the arrangements of a dwelling.

2. In the laying out of land, kitchen gardens and planting grounds should be worked in harmoniously with the general design.

3. There should be every dining-room be a window at the head of the table.

4. Play-rooms and school-rooms for children

are better separate from the house in detached buildings, where this can be managed.

5. Hints derived from the Gothic and Classic styles can be successfully combined by careful study.

6. Our great object should be, not so much to act on the principles of any one style as on the general principles of beauty.

7. Our art must satisfy the imagination as well as the reason.

8. A conservatory may be made valuable as a communication between apartments.

9. There is a rule of three in our art as well as in arithmetic, and equally important, as we shall find on examination.

10. The stone balcony and iron balustrade are worthy of imitation and use, to relieve the flatness of our house fronts.

11. Window-heads and string-courses may be made mutually to assist each other, by an avoidance of harsh contrast and close contact.

A CHÂTEAU OF WILLIAM THE CONQUEROR.

THE quiet little Normandy village of Touques very rarely, I should think, sees the face of an Englishman. The light of a British countenance is not so common here as at Bonneville, a microscopic hamlet away amongst the fields, a couple of miles beyond Touques, and far from any high road. Yet at Bonneville there is an object of great interest to Englishmen. It is one of the favourite châteaux of William the Conqueror, as well as of some of his successors, and of his successors, back to the days of Robert le Diable, and Rollo himself, who is said to have first built it. It is a rare old ruin almost buried in verdure, and though it was once a proud and mighty stronghold, it is now like a grey, worn-out, and somewhat patriarchal slowly disappearing from the earth.

Knowing that the locality is one of the best seen track of visitors to France, and probably entirely unknown to more than a very few Englishmen, it appeared to me desirable to send a short account of the old castle to the *Builder*. Touques, to begin with, is far from all railway communication, and although only a few kilometres from Trouville, the latter fashionable sea and bathing resort, it is not so well known to Englishmen as it deserves to be, although much resorted to by people from all parts of the continent, and even America. Bonneville, it may fairly be assumed, is therefore a perfect *terra incognita* to Britons.

These places are all in the department of Calvados, and in a district which, in respect to Anglo-Norman history, is superlatively interesting. In and close to the department of Calvados, perhaps more than in any other part of Normandy, events occurred which have had the greatest influence on the destinies of England and her people. The chronicles of Falaise, Lisieux, Bayeux, Caen, Hoofton, Helder, Barfleur, St. Valéry, &c., should contain records of events which make all the difference between England as she has been and England as she might have been. There is hardly a village, a stream, a rock, a castle, or a church in this region that has not some event connected with it which greatly influenced the fate and fortunes of England; whether that event was a birth or a death, a warlike muster, a battle, a shipwreck, a treaty, a marriage, or an imprisonment. The most ignorant peasant of the locality is prompt to remind the wandering Englishman that "we Normans conquered England." The comparatively modern name of Calvados is also associated with English history, for it was borrowed from a great Spanish ship of Philip's "Invincible Armada," wrecked on this coast.

Turning his back on Trouville, passing Touques, with a glance at its massive and magnificent old Norman church (in a sad state of dilapidation), the pedestrian will learn that it is the Château of Guillaume Conquerant.

I must make a humiliating confession to a good deal of ignorance of this castle. I had never heard of it, was not aware of its existence, had not the slightest intention of visiting it, and merely came upon it by accident in the course of

an idle summer-day's ramble from Trouville. I was therefore at the mercy of some doubtful recollections of early Norman history, and the exaggerations of a very, very clever writer, in addition to conducting you over the ruins of the castle for the very moderate fee of cinquante centimes, tells you all he knows or has ever heard about the old place, and perhaps a good deal more. With him every vault (where probably the ancient lords of the castle stored munitions and the booty of their wars) is suggestive of coaks of Bayeux of other days; were so many dungeons in which "les malheureux d'autrefois" were cast to pine away and die.

Exaggeration is the tendency of all guides, and it is as well to be on your guard with respect to what they say, especially as you have not "read up" for your visit. In this case I was assured that here was "the Tower of Rollo," there "the Tower of Robert le Diable," that "the Tower of King John," and so on. Yonder was the window at which Queen Matilda worked a portion of the Bayeux tapestry; that gloomy little chamber, hollowed out in the thickness of the wall, was the cell in which the blinded Count de Talvas was confined for the miserable remainder of his life. Many other highly curious and interesting chambers and structures had their special and sensational histories.

Yet with all this mistrust of my guide's veracity and the necessity of being on your guard, there could be no doubt of the great antiquity of the chateau, or that it must have been the scene of many remarkable events. That was always a consolation in the midst of one's doubts and suspicions. If it was not easy to believe (as my guide asserted) that the ceremony of swearing in Harold, the conqueror of the English, took place in this castle, there were other things to support the pretensions of Duke William as successor to Edward the Confessor, took place in that little chamber, and not at Rones, it was certain that the chamber was there at the time, and William and Harold, and perhaps three or four others, might have managed to squeeze themselves into it had they been so minded. The possibility of Matilda working at her many yards of tapestry in a bower of the dimensions pointed out might in like manner be dubious, but certain it is that the bower existed contemporaneously with her, and perhaps she may have sat in it, and embroidered something of the size of a pocket-handkerchief, and contemplated from the window the magnificent prospect of hill and valley, sea and shore, beneath.

Thus none of my guide's stories were absolutely impossible, though a good many of them were improbable. The part of the structure attributed to Rollo was most likely built by him. It was evidently of far earlier date than the rest of the ruin, and its great stones were worn and honeycombed in an extraordinary manner by the wasting action of a thousand years of storm and rain, heat and cold. Subsequent Dukes of Normandy added to this original edifice (little more than a simple tower in itself), and made a strong and important fortification covering a large extent of ground. The outer walls, with strong towers at intervals, rise from the edge of a deep fosse,—in fact, they look down upon a precipice all round their circumference. Advantage was taken, obviously, of a position naturally strong and precipitous, and this was improved by ascending the hill-side where necessary. In its day the chateau must have been all but impregnable.

There appeared to be no reason either to doubt the statement of the guide that in former times the sea, which is now a considerable distance from the locality, originally came close to the foot of the hill on which the castle stands. The broad and flat valley, running inland a considerable distance, which the chateau overlooks, was in all probability an arm of the sea in olden times.

The ocean is still receding along this coast, and a flourishing town (Deauville) has been founded amongst the sand-hills by the late local Mayor, Morney, less than twenty years ago the waters held undisturbed sway.

The little river Dive flows through the valley in question, and it is recorded in history that it was from the mouth of that river that William's fleet sailed for the conquest of England. The high probabilities, therefore, are, that the tradition which asserts that the Norman fleet assembled in the estuary of the Dive (now the flat valley I have mentioned) is quite correct. Neither is it unlikely that it was from this castle of Bonneville (as the guide alleged) that William embarked for the conquest of England, while

Matilda wared her good wishes for the success of the expedition from the battlements.

The great arched gateway which spans the main entrance to the castle is a splendid specimen of early architecture, all ruins as it is. It is a broad pointed arch, and around it are traces of the original fittings and other ornamental efforts. It looks towards the sea, and is nearly, if not quite, due west. The large area within it, enclosed by the walls of the castle, contains a handsome modern mansion, extensive lawn, pleasure grounds, &c., belonging to the present proprietor of the ruins. Everywhere beneath the house and grounds old foundations and fragments of massive masonry exist, the external shell of walls and towers alone remaining above ground. Near the main gateway the guide led me down a long and precipitous flight of narrow stone steps into a gloomy subterranean passage, which can be traversed for some distance. Farther progress along it is prevented by a mass of debris and fallen rubbish. The local tradition holds it that the passage in question originally ran as far as the forest of Toucey, nearly a mile distant. On the other side of the chateau the tradition is that it was blocked in a like manner, and also supposed to be of great length. The utility of such passages in old times is obvious enough.

Undoubtedly this chateau of the Dukes of Normandy must have been an important place, and it is a splendid and interesting old ruin. The most careless observer cannot fail to be impressed by its massive remains. It has not been fairly used, or much more of it would be in existence. Former proprietors were wont, it seems, to turn an honest penny by treating it as a sort of quarry, and selling the stones. It is satisfactory to know that the place is no longer in the hands of those Vandals, the present proprietor is a man of antiquarian tastes, and he does everything in his power to preserve what remains of the old structure.

As already intimated, portions of the outer walls and towers, together with the donjon keep, now alone remain in ruinous grandeur, and they bear ample testimony to the scordid avarice of the Vandal proprietors of past times. There are considerable remains of five towers, and the remains of a sixth are just traceable above ground. The (so-called) Matilda's chamber and Harold's Chapel, the donjon keep, a deep cell in the thickness of the wall, the vastness of that thickness in the present proprietor's mind, and small and gloomy cells, constitute the most interesting features of the ruin.

The donjon keep is in a comparatively good state of preservation. It is built up from very deep-laid foundations, and until recently much of its area below the level of the ground was filled up with rubbish. The present proprietor has caused most of this accumulation to be cleared out. The walls are of enormous thickness, and very little light is able to straggle through the few and narrow loopholes.

We stood on a sort of rough floor or platform formed of planks, about level with the ground, while examining the interior of the structure. The depth below us was dark and profound, and there was a great space above and around. Altogether it was a gloomy, vast, and terrible place, although now no more than a harmless ruin. In the thickness of its wall several small chambers or cells were scooped out, only too suggestive of their use in former days. Woe to the unhappy wretch ("d'entrefer, thank Heaven!) who were cast into these holes by the cruel lords of those days! Even the most privileged of them could only enjoy the air and light of heaven through a narrow, deep, and heavily-grated opening.

In one of these latter cells Duke Robert (so said my guide) was for time detained prisoner, after his unnatural brother, Henry I. had deprived him of his sight, and before he had been finally transferred to Cardiff Castle, to pine away in darkness and silence the remaining years of his once wild, gay, and chivalric life. Amid such associations it was not difficult to conjure up the figure of the unhappy knight standing at that narrow loophole, with his pale, scoured, eyesless face turned up to catch the fresh air, as it blew through the grating, silently picturing to himself the aspect of the glorious but invisible landscape before him, with which he was once so familiar! Blessings on thy active tongue, thou very magpie of a guide, for that innocent, "d'entrefer! monseigneur, d'entrefer!" for it reminds me that such cruelties are done with fer-

The present proprietor of the ruin was, I

understood at the time of my visit, preparing a much-needed guide-book to the chateau. He has done much for the preservation and partial restoration of the castle. Several of the old ruins, passages, &c., have been more or less cleared out at his expense, and the decay and downfall of other parts of the edifice arrested. In the course of these operations some time ago, the workmen discovered in a corner of the grounds, near the outer walls, a large quantity of human remains. The spot is supposed to have been a sort of private burial-ground of the chateau. A multitude of objects in stone, metal, pottery, have been turned up from time to time—bits of helmets, sword-blades, spear-heads, domestic utensils, articles connected with religious worship, including a mutilated stone statue of the Virgin and Child. The funds at the disposal of the proprietor for clearing out and restoring the ruins appear to be (as might be supposed from the vastness of the work), very inadequate; and I learned that he was negotiating with some English "mildred," with a view to securing the wherewithal to accomplish the excellent object he has in view. The present proprietor, it seems, thinks that there have only one wish in the matter, and that is that he may be entirely successful in his negotiations. J. D. D.

THE NATIONAL PORTRAIT GALLERY.

The pictures constituting the National Portrait Gallery, are now hung in part of the 1862 Exhibition building, South Kensington, above the Meyrick arms and armour, and for the first time the full value of the collection already made becomes apparent. Cross-screens to receive the pictures have been set up, as on the occasion of the late exhibition, and the pictures are now presented to the eye in a more convenient position clear of the windows, and the continuous passage is next the back wall, against which, on a shelf, are disposed the busts, somewhat too high up, with a few paintings below them. The portraits are now 295 in number, of which only six have been presented to the eye, they occupy the whole available space. Under the direction of the able secretary and keeper, Mr. George Behar, a chronological order, the death-year being taken, has been attempted, and to a considerable extent maintained. Fresh arrivals, the inequalities in size, and various other defects of the collection, have since made it more difficult than might be supposed. The first portrait on the first screen is that of King Richard III. (supposed to be the earliest in the collection), but before reaching it the visitor must pass a full-length portrait of the lamented Prince Consort (Winterhalter), and some other figures of our own time. We must offer thanks for the complete way in which the collection is labelled. No catalogue is necessary (though a list of the portraits is very properly printed and given away), and the visitor may here obtain with very little trouble a large amount of instruction as well as pleasure. One query for the sake of clearness. Pictures painted in the manner or by the follower of a certain master, say Vandeyck, are described, when the actual painter is unknown, as "painted in the school of Vandeyck." This is not a good phrase, and should be re-considered. Taken as English, it asserts what is not the case.

We have to thank all who have been concerned in securing the portraits from the holes and corners of Great George-street, and setting them forth in a manner which admits of their being fully appreciated and enjoyed.

TOWER SUBWAY.

In so far as the completion of the iron-cased tube between the London clay, under the bed of the Thames, between Tower-hill and Tooley-street, is concerned, the work was practically finished some months since. Six weeks ago placards were publicly exhibited, announcing the opening of the communication upon an early day, but the perfecting of the mechanical arrangements appears to have proved almost as formidable an affair as the part of the work that might have been thought most serious. For five or six weeks the engineer and the contractors have been constantly and anxiously at work in the completion of the waiting-rooms and engines, but especially in endeavouring to get the shaft, and the hauling apparatus into smooth, swift, and safe working order. During the week a large number of visitors, including the Duke of

Sutherland and bevy of ladies, with many less highly-distinguished personages, have visited the subway, and taken experimental trips from one end to the other, by the compass of iron guides in which the passengers are to be conveyed. An announcement appeared in the morning papers that the subway would be opened for traffic on Wednesday last; the opening was again postponed till Thursday; but from a visit we paid to the works on Tuesday last we took the impression that a good deal of time would be lost before the subway could be conducted with comfort and safety. As regards safety, there is no ground for fear. Mr. Barlow's new brake, applied to the lifts, seems to be admirably adapted to arrest the descent of the cage in the event of the suspending chain breaking. While the chain remains intact, two pairs of jaws are laid in a certain position clear of the guide. If the chain snaps, these jaws are released and gradually grip the rods on each side. But this precautionary tackle is almost superfluous, as no serious accident would be likely to result from the drop of the lift from top to bottom of the shaft, which is something about 80 ft. deep, at each end. It rests at the bottom upon a bed, and is stopped at the top by, strong bars of elastic steel, with a number of properly-adjusted blocks of india-rubber in three thick layers. The effect of the sudden descent of the lift, as ascertained accidentally already, has been that it reaches its bottom in about six seconds, instead of twenty to twenty-five as it would be, if it fell upwards on striking the steel bars at the bottom. Six passengers are the complement of the lift. The great iron block which balances it is an equiptise for the empty chamber, and it is loaded, in addition, as for three passengers, so that the margin can never be wide between the weight of the two cars. The counterpoise is raised or lowered by means of a screw, which is exercised to raise or lower the lift. There are now two small engines at the bottom of each shaft, one for haulage of the omnibus, the other for raising and lowering its lifts. The entrances at each end from the streets show square chambers of about 9 ft. on the side, covered with a partition screen, and having a raised platform at the end. The omnibus is hoisted as regards width, but low in head room, the hat catching uncomfortably the arched roof. An efficient system of signals, from one shaft to the other, seemed to us a desideratum still remaining to be supplied; but we have no doubt that this and the other necessary improvements will be successfully applied. From our latest inquiries we are led to conclude that the subway will be opened for public traffic on Monday, April 4th, certainly not sooner; the erroneous statements that have been made during the week in the morning papers have caused much disappointment and inconvenience.

RESTORATION OF A SPIRE VANE AT HERFORD.

A STEEPLE-CLIMBER, Mr. Frith, of Coventry, has been employed to examine the vane and spire of All Saints Church, Hereford, and take down and replace the weathercock, for 15d. The height to the capstone is 212 ft. 4 in., and to the top of the vane 230 ft.

Mr. Frith, with a pupil, commenced operations, as usual, by flying a kite, of silk, about 4 ft. square, with paper-tail, raised about 50 ft. long, and a double line of cord, and after a good deal of trouble in climbing from the bowling-green, by help of ladders, over houses, the kite was soon moored so as to bring the guide line over the capstone of the spire and against the spindle of the vane, but here some interruption was threatened, as the rope got into a crevice, and the pupils were obliged to ascend upon an adjacent building to liberate his lines.

The another line having been duly brought over the vane spindle, the kite was gradually drawn down, and its tail fell in an apple-tree in the mayor's garden, a large rope attached to the guide-line having been at the same time drawn up, and both ends eventually brought into Biwell-street, where they were secured underneath the church walls. A third or "counterpoise" rope was then raised with ten tons of iron weights attached to it, as a balance or counterpoise to Steeple Jack when he should find it necessary to ascend. Attached to these ropes was a "double" or chair, a very simple apparatus in which the steeples were seen to rise, and a disproportion in the balance formed by his body and the iron weights being produced by the use of his feet, with which he paddled or urged him-

self up and down this inclined plane just as he desired.

It was found necessary to order out a large body of police to prevent persons from traversing those streets into which loose stones from the ribs of the steepo might, and in fact did, tumble when disturbed by the feet of the climber. He was up and about the top of the stone-work and beside the vase, which is 230 ft. from the ground, in three minutes.

Having descended for tools, he remounted the spire, and proceeded (by clipping the spidle with his legs) to use both his hands in dislodging the tail of the bird, to which he attached a cord, and swung it in the air amidst the cheers of the multitude. Finding that the implements used were not fitted to remove the ferrule on which the cock was placed, he again descended for a hammer and cold chisel. Armed with these implements he was again in about a minute or two upon the ropes and resting at the brass ferrule until he was able to lift the body of the bird off the spidle. Within an hour and two minutes of the time of his ascent he had brought the vase into the vestry of the church, where it was found to weigh about 26 lb., was 4 ft. 6 in. from back to end of bill, and bore upon the crown of the bird the following inscription:—"G. Collier, fecit 1787." When repaired, the steepo-climber will replace it. Mr. Frith is about to do a similar job at Worcester.

The wind blew stiffly, but the climber chose the right side for his ascent.

A PLEA FOR CULTURE IN THE PROFESSION OF A SURVEYOR.*

THE landmarks of the professions have been broken up in consequence of the sub-division of labour. Take our own profession as an example, and consider how it has grown up. We have a recognised existence; we have grown into an institution. In the beginning of the career of many of us the modern surveyor was unknown. The owners of property had for the most part legal professional men as their confidential advisers, who collected their rents, managed their estates, generally, in a very inefficient manner. The surveyor occupied a simply subordinate position—generally employed by the professional man, and without any particular training, except what he acquired by his own practical experience. But now, stimulated by the vast improvements in agriculture, by the rapid development of our mineral wealth, by the immense extension of railways, and by other causes, the surveyor has gradually acquired an independent position: he is now himself the confidential adviser of owners of property, instead of being dependent on other professional men for employment.

It is well for us to be reminded of this gradual continued increase in the importance of our profession, in order that we may be more impressed with the necessity for a simultaneous expansion of our education and culture.

To what, then, has our profession grown, and for the fulfilment of what duties should we seek to qualify ourselves? We must have a thorough knowledge of the agricultural value of land, and should therefore be practical farmers. For the general management and improvement of an estate we must know something about building and architecture; about draining, surveying, levelling, and the cultivation of timber. We must know, too, the mineral resources of the properties with which we deal, which in itself opens up a vast field of knowledge; we must be familiar with manufacturing and commercial families; we must be good accountants (not so simple an acquirement as some seem to imagine); and we should at any rate be able to solve *à finitio* those problems in statistics, life interests, reversions, and other subjects, the solutions of which are in the habit of extracting mechanically from published tables.

This certainly seems a long list of acquirements; but something still more important is demanded from him who would excel in our profession. He must be qualified to act as witness, arbitrator, or umpire, three qualifications which demand the most careful training. As a witness he must have clear opinions and clear reasons for holding them, and these opinions he must be able to express in concise and lucid language. As an arbitrator he should have the qualities of an advocate, discriminating those points most

favourable to his own case and lucidly enforcing them. As an umpire he should have the qualities of a judge, skill and judgment in weighing evidence on both sides, and in selecting only the material points, not stubbornly clinging to a preconceived opinion, but open to the reasons and arguments on each side, and possessing sagacity to sift the truth from the confusion.

The surveyor should also have a literary and logical culture, in which I am bound to say we are, for the most part, deficient, which will enable him, in the reports he has so constantly to make, to arrange his arguments and opinions in the most concise and logical form; and, finally, he must above all things have a keen eye in dealing with his fellow-men; for, as he must advise the wise and the foolish, the learned and the unlearned, he must have the skill to enter into the minds of those he comes in contact with, and to see things from their points of view, in order that he may know what kind of arguments will be most likely to convince them.

Now a thorough knowledge of most of the acquirements I have mentioned would require the experience of years. A surveyor cannot be so good a farmer as a man with as good an education and ability, who spends his life in nothing else; he cannot be as good an accountant as a professional one; he cannot know as much about building as an architect; he cannot weigh evidence like a judge. Nevertheless, our work is not at present so subdivided that many of the gentlemen I am addressing would shrink from giving an opinion on most of these subjects, or occupying any of the positions I have described. A surveyor then, who would excel in his profession, should aim in the first place at acquiring a sound knowledge of the rudiments of each of his branches, and then a perfect knowledge of as many as he is capable of mastering; and this is in fact a limited form of my general theory of education, viz., that a man should know one thing perfectly and know something of everything else. I do not mean that he should have a superficial knowledge of other things, but a knowledge which will reveal its character though it may be elementary and limited in its extent.

With this view I consider the best preparation for our profession to be a high general education, because I believe that a mind thus trained may be more capable of acquiring its technical details with a comparatively small expenditure of time and labour.

Let us see what branches of learning are included in such an education, and what influence direct or indirect they would be likely to have on our profession.

For the sake of simplicity we may class them under three heads, *—*science, mathematics, and literature and logic.

The direct value of scientific knowledge, especially that of chemistry, botany, and geology, is obvious.

We learn from chemistry the component parts of our various soils and of the plants we grow upon them. We therefore know what elements of the soil a particular plant will assimilate, and hence what we must replace there in order to continue the cultivation of such a plant; in other words, we learn the science of manuring.

Again, a botanist, from his knowledge of plants, will see at a glance the nature of the soil on which particular plants are growing, whether it is barren or productive, wet or dry, light or heavy, so that starting with this knowledge, he can give a comparatively short practice, will be able to give a reasonable opinion on the agricultural value of land. The same may be said of the geologist, but, independently of the value of geology, in an agricultural point of view, to the surveyor who has anything to do with the management of land, a knowledge of this country, a deep knowledge of this science is indispensable.

The knowledge of mathematics, even of a high order, is of direct benefit. Including the mere elementary knowledge of figures in this subject, it is of course essential that we should have a thorough knowledge of bookkeeping, of the best mode of keeping our farm, estate, and other accounts. Questions of life interests and reversions, &c., require a considerable knowledge of mathematics for solution; and, though we are supplied with tables which solve most of such questions without our thought or trouble, yet these tables, in which our tables are applicable, and it is therefore on all accounts desirable that we should be able to solve all such questions by the light of our own knowledge.

But, independently of the direct practical bearing of science and mathematics, their indi-

rect value in training and disciplining the mind is incalculable. It is a most great instrument, through life, to find out the truth about those things, so matter of what kind, with which he is concerned. To do this he must be able to judge correctly of the facts which come before him,—an ability which constitutes one of the greatest distinctions between one man and another, and to do which with effect needs all the resources which the most perfect system of intellectual training can command. For this purpose the value of the study of mathematics and science is essential.

Mathematics teaches us the method of arriving at truth from reasoning; it obliges us to lay down with exactness and precision all the premises from which we mean to argue, to keep each step in one argument distinct and separate from every other step, and thus to cultivate a habit of mind necessary to the elucidation of truth.

Science shows us how truth can be arrived at from observation. We do not all profess to reason, but we all of us profess to draw inferences from observation, and I may safely say that no man who is not a student of science can form an idea what the difficulty of reasoning from experiment or observation really is, or how cautious it is necessary to be, if we would avoid false inferences.

I might speak at some length on the bearing of literature and logic, both directly and indirectly on our profession, but by so doing I fear that I should exceed my proper limit. I will merely observe that one of the greatest wants in our education is the power of expressing our thoughts and opinions in graceful, logical, and grammatical language. We may have arrived at a correct conclusion, and yet be unable to bring it or by a correct judgment of evidence; but few of us have the art of writing down, or expressing clearly, the way in which we have arrived at it, laying down, when necessary, first the premises from which we start; then the various steps of our argument, arranged with confusion, and stated without proof, so that our conclusion may be at once natural and convincing.

This art can certainly be best acquired by a study of literature and logic.

From these remarks you will understand that I recommend for our own education, before we seek to acquire the technicalities of the technicalities of our profession, a wide mental culture such as is generally thought necessary in the older established professions. It is needless for us to enlarge on the indirect advantages of such a training,—I mean, those advantages which are independent of our profession. We all of us have our times of leisure, but we do not all know how to use them best; and this culture must certainly teach us how to employ our leisure with the greatest pleasure to ourselves, and the greatest benefit to our fellow-men.

ACCIDENTS.

THE roof of a house, No. 31, Horse Fair, Wolverhampton, has suddenly fallen in. The agent for the owner of the property had been informed some days previously of the dilapidated state of the house, and he sent a builder to examine it, and do what was necessary, but the builder reported that the house was quite safe. Two women narrowly escaped their life, as they were in the room when the roof gave way.

While three men were engaged in digging a bed for a waterwheel on a farm at Newder, Aberdeenshire, the sides gave way, and they were hurled alive. Three other men were injured.

A gas explosion has occurred at Penrith, Cumberland. There had, during the night, been an escape of gas at the residence of Mr. J. Stoddart, Larkhall. When the servant came down she noticed it, and having shut the windows, struck a light. Nearly all the windows of the house were blown out; the furniture and the paintings were partially destroyed; the walls became insecure; and the servant and a char-woman were set on fire, and are so badly injured that there are doubts as to their recovery. The poor women must have misunderstood the usual advice given in such cases to open the windows, and not to strike a light.

Mr. Williams, station-master of Tesby, has been killed while writing in the Telegraph office, by a large stone from the Leamington Quarry, where blasting operations were going on.

A terrible conflagration has occurred at

* From paper by Mr. Jeremiah Matthews, mentioned in our last (p. 244).

Compta, Bombay. Two hundred houses and 6,000 durras of cotton, equal to 2,500 bales, were burnt, leaving a stock of only 4,000 durras. The loss is estimated at 25 lacs of rupees (250,000l.).

BROWN'S HOSPITAL, STAMFORD.

Sis.—The interesting description of this hospital in the *Builder* of the 19th ult., seems to call for some explanation of what is being done in the restoration.

The desire for the careful conservation of every old feature of the building is closely in accordance with the plans and instructions of the architect, Mr. James Fowler. No portion of the old work is to be touched,—except where monstrous settlement has necessitated it,—and it is then to be reinstated, with its weather face, stone for stone.

The new warden's house is in harmony with the long line of the old building, so well known in Stamford. The chapel walls have been taken down so far only as they were unsound; the stained glass, *misere* stalls, and other fittings being carefully removed, to be replaced intact. The main-room partition is to be removed; and an oaken gallery, open to the chapel,—as of old,—formed above the groining of the beautiful screen.

Westward, where the subsidence of the foundations, noted by your correspondent, has caused great dilapidation; the entrance porch and a portion of the south wall will be taken down, the stones marked, and rebuilt.

The quaint, but somewhat unsanitary, cells of the bedmen will be all removed, and the space thus obtained utilised as an ante-chapel and library, open to the chapel screen, and communicating with the sunny south terrace in Broad-street, and the western cloister.

The chapel and ante-chapel will be warmed with hot air; the latter will be a comfortable meeting place "for old or poor, or weak, and men unbelieved." This tablet and the altar-box mentioned in the *Builder*, with other antiquities, are in the care of the warden, the Rev. C. Nevinson.

The western cloister, of three bays of two pointed and intersecting arches, will be extended three bays further northward. The quadrangle thus formed will extend the whole length of the present building, and be bounded on the north by the beds-house, which are raised upon a terrace, necessitated by the great rise of the ground from south to north. The beds-houses are ten in number: each house has living-room, 14 ft. by 10 ft., with chamber over, and staircase and pantry to each. Spacious landings and offices are provided. A covered way in front of the beds-houses connects them with the cloister and ante-chapel.

The stone from the old buildings on the site is re-used, with its lichen face, and every ancient feature is carefully retained and re-used in the new work: in fact, I think the most scrupulous antiquary could not object, in any way, to what we are doing; and from what I know of Mr. Fowler's practice, I do not suppose the work could have been placed in more careful hands. The saddle-room is to remain as at present, its fine oak roof being recovered with oak boarding and lead, and a new clock-turret built at the south-west angle; the main-entrance room will be over the entrance porch. The contractors for the work are Messrs. Halliday & Cave, of Great-ham.

WM. G. OSBORNE, Clerk of the Works.

THE TRADES MOVEMENT.

London.—An adjourned meeting of delegates of the carpenters' and joiners' societies has been held at the Duke of York Tavern, York-street, Lambeth, in furtherance of the nine-hours movement. From the reports given in by the delegates it appeared that during the week large meetings had taken place in various metropolitan districts, at all of which resolutions have been unanimously adopted, declaring the great benefit that would accrue to the trade, in its present depressed condition, from a reduction in the hours of labour, and also in favour of the new code of working rules to be mutually agreed upon between employers and workmen. Arrangements were then made for the holding of other district meetings.

Plymouth.—Several Plymouth builders complain of having received threatening letters bidding them prepare for death for employing men from the workhouses, although, as they allege, they are being paid the value of their

work. The relieving officer has also been threatened.

Edinburgh.—A meeting of the Operative Painters of Edinburgh and Leith has been held in the Phoenix Hall. There was a good attendance of the trade. The chair was occupied by Mr. O'Brien, and on the platform were delegates from the Trades Council. The chairman introduced the business by stating that a memorial had been presented to the master painters committee of the excessive number of apprentices, and the introduction of unskilled labourers, who, the memorialists stated, were employed to do the work of regular journeymen at a cheaper rate. The following resolutions were carried unanimously after some discussion:—

"That we, the house-painters of Edinburgh, Leith, and vicinity, use our utmost endeavour to rid the trade of the system of employing unskilled labour, so prevalent in our trade."

"That, considering the many grievances which exist in our trade, it is absolutely necessary that the master-painters of Edinburgh, Leith, and vicinity, should become thoroughly united, and that this meeting pledge itself to support the same."

The delegates from the Trades Council spoke in favour of both resolutions.

Perth.—In pursuance of a resolution come to at a general meeting, the masons in connexion with the Perth branch of the United Operative Masons' Association of Scotland have struck work. Upwards of three months ago the men intimated to the masters in Perth, that if the wages were not raised before the middle of the present month from 5jd. to 6d. per hour, a strike would take place. The masters, with one exception, refused to agree to the demands of the men; hence the present turn-out. Most of the men who are not members of the Masons' Association have also struck work. It is asserted that the masons striking trade is not brisk, the principal employers will firmly refuse to give at present the 1d. additional per hour sought by the Operative's Association.

Glasgow.—The operative joiners, at present on strike, have had a meeting in the Prince of Wales Hall, Buchanan-street. Some discussion existed as to the present aspect of the struggle, after which it was agreed:—

"That, with a view to the satisfactory settlement of the present dispute, from this date,—21st March, 1870,—until such time as working regulations and bye-laws for the trade mutually agreed upon are concluded, all bedding employers and employed that the present rate of wages, 8jd. per hour, should not be departed from without the sanction of the committee of the trade; that the present working hours,—from 6 a.m. to 6 p.m., from 10 a.m. to 1 p.m., and from 2 p.m. to 5 p.m., for five days of the week, and on Saturday, from 6 a.m. to 6 p.m. and from 10 a.m. to 1 p.m.; in all, fifty-one hours,—shall not be departed from without six months' notice from either party; and that a copy of this resolution be printed and submitted to those employers who have acceded or are likely to accede to our present demands, for their mutual agreement."

"That in consequence of the non-acceptance of the conference offered by us to our employers, for purposes of mutually arranging a code of bye-laws for the trade, offer them another opportunity of so doing. Should such not be accepted, then if there is no work print our revised code of bye-laws, and submit them to the trade for mutual agreement, before we concede to any settlement of the present dispute."

The Liverpool carpenters and joiners have resolved to support the Glasgow joiners in their movement.

RAILWAY MATTERS.

Bow.—The new railway station of the North London Company at Bow has been opened for public traffic. The main building fronts the Bow-road, and over the booking and other offices there is a room, or hall, nearly 100 ft. in length, with an arched roof. The platforms and approaches are somewhat similar to those at Dalton Junction. The cost of the new station complex is stated to be 25,000l.

Bath.—The Midland Goods-station in Sydenham-field approaches completion. It is built of blue limestone, with Box stone dressings. The roof is supported on a light framework of iron, and has rough thick glass in the centre. The offices are at the east end of the station. Sydenham-field being separated from the city by the river, a bridge is being constructed to form a communication between Seymour-street and the goods-station. The bridge will be of cast iron, and in most respects similar to the existing one, with which it will be parallel, at a distance of about 100 yards. It will, however, have no piers, supporting it in the centre. The bridge will have a clear span of 150 ft., while its width will be 24 ft. The abutments on the Seymour-street side of the river are now in course of construction. The works are being carried out by Mr. Humphreys, of Derby, and his manager, Mr.

Green, from the plans of Messrs. Allport, Junr., & Wilson, the engineers, and the architect, Mr. Standen.

Sparks.—In the Court of Session, Edinburgh, an action has been brought by Mr. John Murdoch, junr., Castle Douglas, for damages occasioned by a fire which originated through a stream of sparks from an engine on the defendants' line falling on his premises. The damages were laid at 1,018l.; the jury awarded 785l.

English-built Locomotives Abroad.—The number of locomotives ordered thus far in England for Russian railways is about 350. Of these, 111 have been ordered of Messrs. Sharpe, Stewart, & Co., of Manchester; 15 of the Worcester Engine Company; 23 of Messrs. Neilson, of Glasgow; 12 of Messrs. Beyer, Peacock, & Co., of Manchester; 56 of Messrs. Kitson, of Leeds; and 69 of the Yorkshire Engine Company. A considerable number of these engines are already delivered; others are still on hand.

BERKSHIRE, READING, AND NEWBURY LUNATIC ASYLUM.

The subject of the accompanying illustration is the newly-erected asylum for the reception of the insane poor of the county of Berkshire, and an adjoining convalescent office, erected on a site favourably situated on the banks of the Thames at Chisley, near to the Monksfort Station on the Great Western Railway. The land slopes gently southwards to the river, and is bounded on the north by the turnpike-road to Wallingford. The general outline of the plan affords uninterrupted views of an surrounding country, free access to sun and air, and is so arranged as to give the day-room a good aspect. There is no road nor building on the south side, which is appropriated entirely to the use of the patients, and will be laid out for them as gardens and airing-grounds. The accommodation for male and female patients is kept quite distinct on either side of the centre, and the kitchen and stores are so placed that the service on each side shall also be separate.

The working patients who are engaged in the laundry and workshops are placed in the north block (the one illustrated), in the centre of which is an entertaining convalescent office, porter's room, reception and waiting rooms, visiting justices' room, and steward's apartments. A residence is provided for the superintendent on the west side of the north block, with the front windows commanding the high road and the entrance to the asylum. It is connected by a circular corridor with the office.

The wards for acute and recent cases, with a large dining-hall, form the south block, and the infirmaries the east and west wings. They are in a quiet position at a distance from the other wards, and where they cannot be used as a thoroughfare to any other part of the establishment. In the centre between the north and south blocks are the administration offices, including kitchen, scullery, larders, cellars, stores, dispensary, rooms for servants, engine and boiler house, pump-house, laundry, wash-house, and workshops for tailors, matmakers, shoemakers, and others.

The pay-rooms, and patients' corridors, and staircases, leading open fireplaces, will be warmed by Haden's hot-water apparatus. Rain-water will be stored in large tanks, and spring water pumped up into cisterns in the tower. All the buildings will be lighted by gas made at works erected for the purpose on the ground.

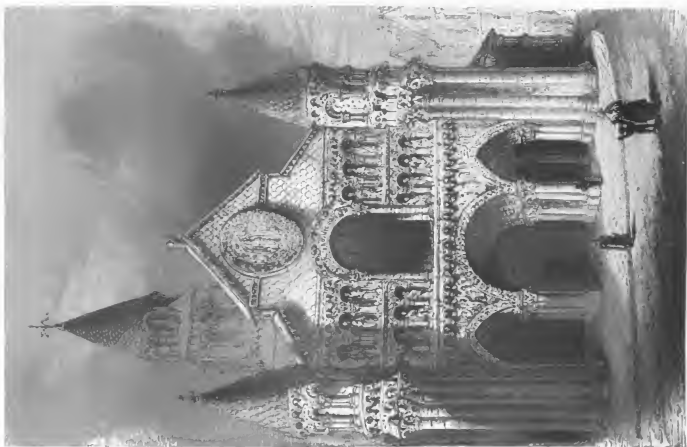
The estate, which covers an area of sixty acres, will be laid out and partly cultivated by the patients. The sewage will be applied to the land. There are farm buildings, including stabling for horses, cow-houses, pigsties, root-houses, &c., and cottages for the farm bailiff and engineer, as well as an entrance lodge and cottage adjoining.

The chapel is placed at a little distance from the main building, so as to give the inmates the opportunity of a walk to and from the services. The nave is 51 ft. by 25 ft., and the chancel, which has a semi-circular apse, measures 24 ft. by 20 ft.

The buildings are constructed of red brick-work, slightly relieved with stone and coloured brick dressings, and have been erected by Messrs. Mansfield & Price, of London, under the direction of Mr. C. H. Howell, of Lancaster-place, Strand, the architect of the New Surrey and East Riding Asylums.



MR. JOHN GIBSON,
Architect of Dobroyd Castle, Todmorden.



THE CHURCH OF NOTRE DAME, POITIERS, FRANCE.



BERKSHIRE, READING, AND NEWBURY LUNATIC ASYLUM.—MR. C. H. HOWELL, ARCHITECT.

"THE ARTS IN THE MIDDLE AGES."

In our review of M. Paul Lacroix's work,* we mentioned the facsimile of a miniature, drawn with a pen, taken from a Bible of the eleventh century now in the Imperial Library, Paris. Although rude and showing the decadence that the art of drawing the human figure had fallen into, it is curious in several respects, and we reproduce it. We see the masons using the pick, the trowel, and the plumb-bob, as still employed: the entablature of the central column is also noticeable.

We are enabled to reproduce, too, the view of the entrance front of that remarkable church, Notre Dame la Grande, of Poitiers (France), with its multitudinous sculptured figures, borders, and scrolls, and where on each side of the semicircular-headed central doorway the pointed arch appears, probably induced by desire to render the side arches more nearly of the height of the central archway. Many years have passed since we saw this building, but we remember distinctly the interest with which it was viewed as an extreme elaboration of the plainer kind of what we call Norman work,—a phase of the style then new to us as a student. At the time we visited the building it had been long untenanted, and was nearly black; and in place of the two columns that carry the arch of the great window in the centre, there were two interpolated canopied niches. These have been removed, and other work has been done. M. Lacroix puts under his view of the front "Twelfth Century." The body of the church belongs to the end of the eleventh, or beginning of the twelfth century, but the front in question we have reason to believe is scarcely older than the commencement of the thirteenth. Of the sculpture we wrote at the time,—*"The spandrels beneath the first cornice and corbels contain a series of bas-reliefs, representing on the left-hand side of the spectator Adam and Eve, Nebuchadnezzar, some of the prophets, and an angel announcing to Mary the dignity of her coming child; and on the other side the meeting of the Virgin and Elizabeth, and the birth of the Saviour. Over the doorway is a circular-headed window, with a canopied niche*

on either side, which is an interpolation of later times. The figures in the arcades represent the apostles and two bishops. The lower part of the gable is inlaid with a series of small circular discs, and the upper part of it with squares placed diagonally; in the centre of the two parts is sculptured a large *verre de pitié*, containing a figure of Christ, and symbols of the four evangelists, namely, the bull, the angel, the eagle, and the lion."*"*

CONSTRUCTION OF THE WOLF ROCK LIGHTHOUSE.

INSTITUTION OF CIVIL ENGINEERS.

On March 1st, Mr. C. B. Vignoles, F.R.S., president, in the chair, the paper read was "On the Wolf Rock Lighthouse," by Mr. Jas. N. Douglass.

Before entering upon the immediate subject of the paper, the author noticed briefly some other works which had been executed from time to time in the same neighbourhood, and with which it was intimately connected. These included a lighthouse on the Longships Rock, built of granite in 1795, and from which a catoptric fixed light was exhibited. Owing to the terrific seas to which it was exposed, the lantern, with its centre at an elevation of 70 ft. above high water of spring tides, was so much under water during stormy weather, that the character of the light could not be determined with accuracy. In its stead a granite column 110 ft. high was now being erected, to be surmounted by a first order dioptric light. In the same year, 1795, beacons were erected on the Wolf and the Randlesstone Rocks. These works were described, as well as a second beacon erected on the Randlesstone during the years 1841-3, the mast of which was on several occasions carried away and had to be re-instated. The dangers of the Randlesstone had since been marked by a bell buoy. An iron beacon was also erected on the Wolf Rock during the years 1836-40, and during these five years it was only possible to work on

the rock for thirty and a quarter days of ten hours each. The mast of this had likewise to be renewed several times. The ironwork of this beacon, after an exposure of thirty years to the corrosive action of sea water, was in a good state of preservation, having been protected by a coat of red lead paint, renewed annually.

The Wolf Rock was stated to be composed of a hard, dark, felspathic porphyry. Its highest part was 17 ft. above low water of spring tides, which had a rise of 19 ft. The surface was rugged, rendering a landing upon it difficult. The depth of the sea water close to the rock was twenty fathoms, excepting on the south-east side, where a shoal extended for a considerable distance. In the year 1860, the late Mr. Walker was instructed to furnish a design for, and an approximate estimate of the cost of, the work.

These having been approved, the author, who was then completing the Smalls Lighthouse, was appointed to carry out the work as resident engineer. The form and dimensions of the tower differed but little from those of the Bishop, the Smalls, and the Hanols. Its exact height was 116 ft. 4½ in., its diameter at the base was 41 ft. 8 in., and near the top, at the springing of the curve of the catoptric lantern, the diameter was 17 ft. For a height of 39 ft. 4½ in. from the base the work was solid, with the exception of a space forming a tank for fresh water. At the level of the entrance door the walls were 7 ft. 9½ in. thick, whence they gradually decreased throughout the whole height of 8 ft. 8 in. to the shaft, to the thinnest part near the top. The shaft of the tower was a concave elliptic frustrum, the generating curve of which had a major axis of 236 ft., and a minor axis of 40 ft. It contained 44,506 cubic feet of granite, weighing about 3,200½ tons; and its centre of gravity was 30 ft. 3½ in. above the base. In consideration of the exposed position of the work, it was determined to dovetail each face stone vertically and horizontally, in accordance with the system suggested by the author's father, and first adopted at the Hanols Lighthouse. This method consisted in having a raised dovetail band, 3 in. in height, on the top bed and one end joint of each stone. A corresponding dovetailed recess was cut in the bottom bed and end joint of the adjoining stones, with just sufficient clearance for the raised band to enter it freely in setting. From experiments made upon blocks of granite put together in this manner with Portland cement, it was found that the work was so homogeneous as to be as nearly as possible equal in strength to solid granite. In addition to increased strength, this system of dovetailing afforded great protection to both the horizontal and the vertical joints, against the wash of the sea when the work was first set. As an additional precaution, each stone of the first twenty courses was also secured by two bolts to the courses below. The masonry, to the level of high water spring tides, was set in fresh Medina Roman cement, part of which was supplied from the Government Stores at Chatham, and part was manufactured by Messrs. Francis & Co., from whom the Portland cement was obtained for setting the work above high water. All the cement used in the work was mixed with an equal portion of clean, sharp, granitic sand, obtained from the stampe refuse of the Balleswidden Tin Mine, near Penzance. This sand was of excellent quality for such work, every grain in it being hard, angular, and round. Salt-water was used for mixing all the cement required for the landing platform and for the solid portion of the tower; above this fresh water was used. The step ladders for ascending from floor to floor, and the partitions between the rooms and staircases, were of cast iron, and precaution had been taken to limit the use of wood for the fittings as much as possible, in case of fire. The doors, windows, and storm shutters were of gun-metal. The windows of the watch or service room, immediately under the lantern, were specially arranged for admitting air to the lantern, and for regulating the ventilation, in all ordinary weather. The supply of air was admitted by a valve at the upper part of the window, so as to pass above the head of the light-keeper on duty, and upwards through an iron grating surrounding the lantern floor.

The lantern was one of the cylindrical heliographically-framed type, designed by the author, and adopted by the Trinity House.

The total cost of the undertaking, including the lantern, the illuminating apparatus, cost of workyard at Penzance, vessels, and all incidental expenses, might be taken at £2,726.

* Pen and Pencil Sketches of Potlery and Angouleme, with some Remarks on Early Architecture." By George Godwin.

* See p. 258, ante.



CHURCH-BUILDING NEWS.

Hodding.—The church here has been reopened, having been closed since August last, in order to permit of alterations and improvements which have been made in the fabric. The alterations and additions are briefly these: a new organ chamber and vestry have been built, and this arrangement has permitted of the organ and choir being brought downstairs; a new oak reredos and communion-rails have been put up; an oak pulpit and oak lectern erected; the chancel has been re-tiled, and the tall pews have been cut down. The roof formerly was mainly composed of plaster. This has been removed, and suitable woodwork introduced. A new heating apparatus has been introduced, and considerable attention paid to ventilation. The whole of the works have been carried out under the superintendence of Mr. Chas. Fowler, architect, Leeds; and the reredos, pulpit, lectern, &c., have been executed from his designs.

East Horsey.—The parish church of East Horsey, which, some months past, has been undergoing restoration, has been opened by the Bishop of Winchester. On the same day a mausoleum for the family of the Earl of Lovelace was consecrated by his Lordship. The church is an ancient structure,—in fact, one of the oldest in the country; and having fallen into a dilapidated condition, the nave and side aisles have been pulled down, and re-erected as nearly as possible on the original plan. Besides the north wall, in which are inserted several monuments, as well as one or two ancient windows, containing effigies in painted glass, the only portion of the building that has not been renovated is the square tower, covered with lead. The restoration has been carried out by Messrs. Swayan of Guildford, builders, from designs by Mr. H. Woodyer, architect.

Norwalk.—At a meeting of the committee appointed to carry out the necessary preliminaries for the proposed church at the north end of the village, the reports from the several collectors were received. The amount promised was sufficient to warrant the committee in proceeding further in the undertaking, and it was determined to accept an offer made by the trustees of the Duke of Newcastle to sell any quantity of land they may require for their purpose in North-gate, now occupied as gardens. The price is to be 3s. per acre, which is above the market value. Architects residing in Nottinghamshire and Lincolnshire will be invited to compete. It is intended to erect a building to accommodate 600 people, and capable of extension at a future time, at a cost, in all, not exceeding 5,000l.

Fulham (Chamberidge).—The parish church has been re-opened, after having been restored. The church had got into a very dilapidated state. The windows in the tower, which were blocked up, have been re-opened and renewed. In the nave a decorated roof has been placed, almost a copy of the old one. The chancel arch is new. The chancel is 8 ft. wider at the west than at the east; it also leans some inches to the north. The chancel is lighted by lancet windows, which would have an improved appearance if filled in with coloured glass; the east window especially looks very bare. Seats have been retained, but the majority of them have been replaced by oak benches with curved panels. The roof is entirely new, and the floor is paved completely with Staffordshire tiles. The total cost of the work has amounted to 4,000l. Mr. Bloomfield, of London, was the architect; and Mr. R. Tooley, of Bury St. Edmund's, the contractor.

Shiford.—The new church of the Holy Innocents has been consecrated. The building is in the Early English style. It is a flat-roofed church, without aisles, but with arch dividing the chancel from the nave. On the south side is a vestry. The tracery and door-jambs are of Bath stone, and the exterior of flint, interspersed with stone bands. A bell-cot surmounts the west end, built for two large bells; at present there is but one. The interior is finished completely with Bath stone. The chief entrance is at the west end, over which an oak porch is raised, the gift of the Rev. J. L. Randall, rector of Newbury. The chancel is apsidal; at the curve in the interior is an arcade of seven arches, carried upon banded shafts of grey Bath stone. There are additional stone scrolls, a piscina, &c., in the north side, and credence-table. At present there is no reredos, but arrangements are made for one to be fixed hereafter. The apse is lined with a dado of tiles, from the works of Messrs.

Maw & Co. The chancel floor is laid with fancy tiles, and the body of the church is also paved with tiles throughout. The pulpit, which is severely finished, is of oak, and the gift of Mr. Gower. A number of steps between the nave and the chancel give elevation to the holy table at the east end. The nave, in the absence of fixed seats, is supplied with chairs. There is a good deal of carving in the chancel, the caps, shafts, and corbels of the chancel being carved in stone. The glazing is of rough cathedral glass, and in patterns. At present there is no stained glass. The cost of the work has been about 1,600l. The architect was Mr. C. F. Hayward, of London; and the contractor Mr. T. Woodbridge, of Hungerford.

Brook.—The newly-restored church of St. John and St. James has been re-opened for divine service. During the past twenty-eight years, the building, formerly the chantry of the hospital, has been allowed to fall into decay, and, from some want of harmony between the inhabitants of Brockley and the owners of the hospital, the church has been in the hands of the College, Oxford, nothing was done to restore the ancient edifice to its proper use. Liberal aid, however was given by the college authorities, so that in a short time 2,282l. 2s. were collected from different sources, of which sum 122l. were devoted by Magdalen College (in addition to 800l. for the interior work) to the exterior renovation, which included new west doors (with wrought-iron hinges), new internal rere arch, the metal-work about the walls and roof, drainage, restoration of the tower, and stone crosses to the eastern and western gables. The tower also included a gift of 100l. from the Peculiar of St. Peter and St. Charles. The works were placed in the hands of Mr. C. Buckridge, of Oxford and London, architect, and the edifice has been restored to something of its ancient splendour.

Shoddham (Norfolk).—The parish church of Shoddham has been re-opened after restoration, the chancel vestry being entirely new. The old chancel was almost entirely rebuilt about 1850, in the style of the period. The present erection, which supplies the place of the other, is in the Early Decorated style, the materials employed being flint and Causton stone. The reredos is carved and coloured, a marble cross being the principal feature in the composition. A high chancel arch separates the modern section of the building from the nave, and on the south side this is extended onwards, so as to form a pulpit. The vestry is large, and is on the north side. The church is lighted by three oratories, illuminated by the Brighton lamp. The entire cost is 1,907l. 7s. 6d., of which 1,073l. 10s. 6d. was contributed by Sir Thomas Harb, bart. of Stow Hill, and the remainder by the parish. The architect was Mr. R. J. Withers, of London; and the contractor, Mr. Brown, of Lynn. The decoration of the reredos was done by Messrs. Bell & Almond, of London.

DISSENTING CHURCH-BUILDING NEWS.

Clarendon.—The Baptist new chapel on St. George's-road has been opened for divine service. The building is in the Italian style of architecture, and was designed by Mr. George Woodhouse, of Bolton, architect. The principal front is situate in St. George's-road, and is set back 15 ft. from the line of street. The main walls are built of pressed bricks. On each side of the ground-floor story are seven large windows, with arched segmental reveal arches and jambs; the upper windows have semi-circular heads; and at the springing of the arches in front and sides are built bands of black brick forming distinctive horizontal lines. The base course of the walls is built of pitched-faced wall stones, quarried from the neighborhood, and the dressings are Yorkshire stone. The gallery front and framing has two circular arches, the former with pish-pine frame elongated panel, with mouldings, cornice, and mahogany book-board. Iron columns, with capitals, support the gallery, which is divided into five pews at each side and aisle. At the north end is a children's gallery, which will seat 200. The framing to the gallery is similar to the body of the chapel, but of common pine. All the woodwork is stained and varnished. All the floors and thresholds are boarded; and the windows are fitted with sliding sashes for external ventilation. The ceiling is divided into central bays, with plain border and dentil cornice and mouldings. Five sunlights, gilded, are suspended

from the ceiling, and a number smaller in size under the gallery give light to the whole chapel. The great width of the floor and balcony, by a double queen-post roof, and covered with blue Bangor slates. Three vestries are provided at the back part of the ground floor of the chapel, together with a general staircase. The nature of the site has enabled the architect to provide a large and commodious schoolroom, and he has introduced a mezzanine floor and balcony, by a sliding sash-front. This arrangement gives to the committee nine separate class-rooms for the teaching of adults. The whole of the rooms are lighted by external windows, and the class-rooms are fitted with fireplaces. A fire-proof room is provided, and hot-air heating apparatus has been introduced by Messrs. W. & W. Bolton. The chapel and offices will cost about 5,500l. The contractor who has executed the work is Mr. John Robinson, jun., of Hyde.

Normanton.—The new Congregational Chapel at Normanton is now completed and opened. It is seated for about 200 persons, and has in communication with it, by a series of communicating shutters, a school-room capable of accommodating nearly 100 more. It is designed in the Early English style of architecture, the walling being red brick with dressings of Little Eaton stone. The side elevations have trefoil-headed windows arranged in complets. The end bay on one side is occupied by a tower-fronted bell-tower, with a single lancet window with two-light plate tracery window. The front elevation has a high-pitched gable with a three-light tracery window, and a timber-framed and slated bell-turret. The pewing is open-framed, stained and varnished. The cost has been about 500l. The architect was Mr. Tait, of Leeds.

Leigh.—A new and commodious chapel has been opened for divine service in Bradshawgate, instead of the unsightly erection which had formerly served the Primitive Methodists of Leigh to worship in. The new chapel is in the Norman-Gothic style. The original design of Mr. Pritchard, C.E., the architect, was not strictly carried out in all its details, but the general character of the work having to be abandoned. The building is constructed mainly of brick, with dressings of Edge Fold stone, and of coloured bricks for the doors and windows. The front facing Bradshawgate is composed of pressed brick, tuck pointed. In the centre is a large ornaamental Gothic window. The form of the interior is of an ornaamental bath architectural style, with a high chancel at the south end, containing a panelled Gothic rostrum, and also supplying accommodation for the choir. The roof is on the king-post principle, with segmental collars, secured with wrought-iron straps, bolts, and plates, and ornamented with sunk and perforated panels. The acoustic properties of the chapel are said to be good. The chapel is capable of seating between 400 and 500 persons, and underneath is space for a school-room, vestry, and three class-rooms. The plot in front of the building will be planted with shrubs, &c. Enclosing the front space is a railing, which has been prepared from a design of the architect. The entire cost of the building, including 1,600l. and 1,700l. The builder was Mr. Thomas Bethell, of Earlestown.

Greys.—The foundation stone of a new chapel for the Primitive Methodist community in this place has been laid. The building will be situate within easy reach of all parts of the town. It is computed to cost nearly 1,000l., of which about 300l. are still required; and the builder is Mr. Larkin, of Orsett.

Horncastle.—The new Wesleyan chapel, opened at Horncastle, is built in the Italian style of architecture. Its external dimensions are 96 ft. in length, 58 ft. in width, and 35 ft. in height. The walls are built with brick of a reddish, heavy Bath stone dressing. There are three entrances in front, with glazed screens in the vestibules. The body of the chapel contains 430 sittings, 125 of which are free. There are four false entrances and staircases leading to the gallery, which is semicircular at each end, and besides an orchestra, contains 630 sittings, 42 of which are free. At the rear of the building there is a band-room, 58 ft. by 171 ft., and five class-rooms and vestries, all warmed by open fires, and lighted with gas. The chapel is warmed by hot-water pipes, and lighted by two large sun-burners, and eight pendants under the gallery. All internal woodwork is stained and varnished, and the walls are painted white and gold, which are painted white and gold. The windows are glazed with enamelled glass, having ornamental coloured borders. The cost will be about 4,500l. Mr. William Waddington, of Burnley,

Lancashire, were the architect; and Messrs. Walter & Hisman, of Horncastle, were the builders.

Woodgreen (London).—It is proposed by a congregation of Wesleyans, who have hitherto occupied the Mission room, Woodgreen, to erect another place of worship. The site chosen is situated in the Bounds Green-road, near the Fishmongers' Almshouses. The cost will be about 4,000*l.*, and it will be capable of holding 1,000 persons. The building will contain a large room at the back for Sunday-school purposes. It is intended at first to erect only a portion of these buildings.

Books Received.

The Rosicrucians; their Rites and Mysteries. By HARGREAVE JENNINGS. Illustrated. London: Boston, 1870.

IN 1858 the author of this book published a work entitled "Curious Things of the Outside World," in which his peculiar views and deductions as to Rosicrucianism were hinted at; but his present work is quite a new one, forming what the author calls "a history of the alchemical philosophy, written with a serious explanatory purpose, and for the first time impartially stated since the days of James P. M. Jennings does not wish to commit himself to the strange doctrines of the Rosicrucians, but merely to be held as their historian; and yet he speaks as if he were bound not to reveal their deepest secrets; and, speaking at them, in his preface, as if they were an existing brotherhood, he assures us that "no student of the occult philosophy need fear that we shall not most carefully keep guard—standing sentry, so to speak—over those and more recondite systems which are connected with our subject;" and assuredly, although he quotes some of their mystical and obscure dicta, he does not reveal to us their meaning—a fact which admits of more explanations than one. Nevertheless he tells us, as we have said, that his present work is written "with a serious explanatory purpose."

Rosicrucianism is a very curious subject, regarding which, little except, perhaps, what the Count de Gabalis has "revealed," has been written, or is known, in modern times. This work, therefore, cannot but interest many readers. It gives an account of the ancient fire and serpent worship, and attempts to explain "mystic symbols represented in the monuments and talismans of the primal philosophers." Many of these symbols are very curious; but just as Mr. Jennings takes care to let his readers know that he does not identify himself with the doctrines of the Rosicrucians, which, indeed, he does not reveal, so must we be excused from identifying ourselves with his "serious explanatory purpose," all the more especially in regard to what he says on architectural subjects. The illustrations are very numerous (upwards of 300, it is said), but not well arranged. They form, together with the text, a very curious volume, the materials of which must have cost Mr. Jennings great and long-continued labour to collect; but it is to be hoped his loyalty to the Rosicrucian or other occult brethren or friends will enable him, in another edition, to digest and arrange his subject more relevantly, and explain himself a little more clearly, than he has yet done.

VARIORUM.

"A Plea for the Compulsory Teaching of the Elements of Physical Education in our National Elementary Schools." By Matthias Roth, M.D. Groombridge & Sons, Paternoster-row. The claims of physical education to rank with reading, writing, and arithmetic are pretty strong—always, of course, with due respect, we hope, to the poor little brains that are busy in acquiring physical material, as well as physical and all other sort of education. The aim of this pamphlet is to induce the Council of Education to rule that a school shall not be considered efficient unless physical education, including military knowledge, forms part of the regular and daily instruction; and that no Government aid should be given to any school unless the inspector reports sufficient progress in this educational branch.—"The Educational Condition and Requirements of one Square Mile in the East End of London." Bell & Daldy. This Supplement to the Journal of the Society of Arts has been prepared, at the request of the council, by Mr. George C. T. Bartley. It relates to

the district about Bethnal-green, Kingland, and Haggerston. The district contains 17 schools receiving Government grants; 2 schools inspected by Government, but receiving no grants; 27 schools not inspected by Government; 8 schools proposed to be enlarged; and two proposed new schools. The estimated population of the district is 130,000; number of houses, 17,580; estimated number of children between 5 and 12 years, 30,160; number at school, 10,808; of which number 5,618 are in Government inspected and aided schools. The estimated number of children taught to read, written, and do arithmetic fairly well is, say, 4,000; the estimated number growing up more or less in ignorance, 19,262; the estimated cost of new school buildings and land absolutely necessary if these are to be educated, 60,000*l.*; and the annual cost of keeping up these schools will be 16,000*l.* In the district referred to there is a public-house or beer-house for every 53 private houses, and for every 249 adults. In all there are 165 public-houses and 166 beer-houses, and the estimated amount annually spent in them by very poor people is not less than 450,000*l.* One penny out of every eight in this sum would more than build all the new schools required, and in the twenty-eight years they would be going.—"Registration of Correspondence: a new System applicable to large Offices, &c." By R. W. Lapper, Euston Station. Waterlow. This is an important matter in all large offices, and the improvements here suggested cannot fail to be of interest to all concerned in them. The author's plan is that under his plan a suitable registering-clerk could easily control half a million of letters per annum, so as to be equal to any emergency.—"The Uses of Plants in Food, Arts, and Commerce." By Ellis A. Davidson. Cassell, Petter, & Galpin. This little book contains a series of useful and interesting reading matter for school-boys, and subjects as the bread-plants, breakfast-plants, spices, dyes, and so on.

Miscellaneous.

St. Peter's Mission Hall, Worcester.—This building, erected at the sole cost of Mr. J. D. Allcroft, has been opened. The hall is situated in Wyld's-lane. The upper room is designed for division into two parts, to furnish a reading-room for working men, and another for the senior scholars of St. Peter's boys' Sunday School; and in this building will be held short services for the poor, lectures, Bible classes, mothers' meetings, reading-rooms, classes for moral instruction, and a night school. The Mission Hall is of Gothic design, three stories high, with three corbelled and copped gables, and carved finials, surmounting the roof. Brick and freestone are the materials used. Each story has large windows with stone mullions and transoms, label mouldings and strings, the uppermost tier of windows being pointed, and the centre one traceryed. The entrance is a pointed archway. The large room on the ground floor is 46 ft. by 25 ft., and 15 ft. high; those on the first and upper floors are of the same proportions, but the latter is open to the roof, being 25 ft. in height. There are in connexion with these apartments class and other rooms. The floors are framed with trussed transverse beams, which divide the ceilings below into panels, having plaster mouldings intersecting with those of the walls. The roof is covered with lime and red tiles, having open metal ridge cresting. Ventilation is provided for by means of hopper casements in the windows, the extensions being through separate wall fins having gratings below the ceilings, and the fines communicating with principal vertical ones constructed in connexion with the chimney shafts. The warming is by open fire-places. The entire cost of the building, including site, was about 4,000*l.* Mr. Henry Rowe was the architect; Mr. O. Wilson the contractor; and Mr. Brock the gas-fitter.

The Late George Catermole.—A committee of gentlemen, consisting of Messrs. W. P. Frith, R.A., William Evans, B. C. Hall, Edward Franks, and Tom Taylor, are exerting themselves to procure funds for a monument to the late George Catermole, to be erected in the cemetery at Norwood, where he is buried. They appeal to the art-patrons who possess examples of the artist and appreciate his genius, and to his brother artists "who have been more fortunate than he was."

Society for the Encouragement of the Fine Arts.—On Thursday, 24th ult., Mr. James Dalrymple gave a lecture on "The Poetry of the Arts." Mr. W. C. Haslett was in the chair. The lecturer said that the poetical in art had for its object to interest the feelings by means of form and colour, by graceful and fitting words, to cheer, whilst satisfying the intelligence, it teemed with life and beauty. High art he had the greatest respect for; but greater for that true art which rendered the artist a connecting link between the living and the dead. After some remarks on Egyptian, Grecian, and modern art, and on their slow progress towards mastery, Mr. Dalrymple proceeded to show how Christianity had revolutionised art, noticing its revival on the establishment of the Papal throne, and the character impressed upon it by Cimabue and Giotto, Michelangelo, Perugino, and Raffaele. Next addressing the possession of the human art, with a passing tribute of respect to the labours of the old monkish artists, he eulogised the poetry of the pencil of Turner, Wilkie, and Martin, dwelling on the poetical sentiments evoked by "The Fighting Temeraire," "The Distressing for Rent," and "Belshazzar's Feast;" and he concluded by a few remarks on the condition of art as it is treated by some reflections on the tone thought and study required to produce a work of genius, and on the deep sense of gratitude that was due to the artist.

The Health of Southbourne.—A Government inquiry has been taking place at Eastbourne as to the alleged prevalence of fever there and its causes. Dr. Thorne's report shows that in Southbourne the condition is usually found in towns where typhoid fever prevails; polluted water-supply to parts of the district, water-closets without water, sewers badly ventilated, house cisterns communicating directly with the sewers by means of the waste-pipe. The badness of the ventilation of the drains is the result of endeavouring apparently to save as much powdered charcoal as possible into the receptacles made to hold it in the ventilators; thus turning it into an effectual stopper of the ventilators. The result must naturally be that the sewer gas makes its escape into the houses. The inspector expresses doubts whether the charcoal ventilators can be safely continued.

Stanley Cottage Hospital.—The incorporation of a cottage hospital for the chronic mining village of Stanley, situated about three miles from Wakefield, has been laid. The originator of the scheme is due to Mr. Charlesworth, of Hatfield Hall, but it has met with general support. The site of the hospital is on the Stanley-lane End-road, behind the church, and is now proximately to be sold. The scheme made a fine view along the valley of the Calder. The proposed building is in the Gothic style of architecture, and is intended to consist of six rooms, besides cellars, but is capable of enlargement. The cost, including furnishing, is estimated at 450*l.*, the whole of which sum has been raised.

Worcester and Chatham.—The arrangement on the part of the Earl of Jersey and his corporation of this city for the lease, by the latter, of the castle and castle grounds for public gardens and parks, has been finally made. The corporation are to expend 2,000*l.* in laying out the castle gardens and grounds for the purpose of a public park for the use of the citizens. The castle have been reserved for the tenants in occupation. The plans and specifications for the proposed new corn exchange to be erected by the corporation have been prepared by Messrs. Flockton & Abbott, the architects. The corporation have obtained possession of the whole of the buildings and property adjacent to the present corn exchange, on which the new edifice will be erected, and these will shortly be demolished.

Sash-Fasteners.—We spoke recently of a sash-fastener made to prevent the window being surreptitiously opened by a knife, or similar instrument, working between the sash-barn. Messrs. Hobbs & Hart have sent us one which, in addition to effecting this, tightens the sash for greater security. The sliding of a knife between the sashes to force the catch back, which is now so often practised on the ordinary sash-fastener, is here prevented by a small underpin covering the joining line. There is a similar cover to tighten up the locking screw, rattling, entire window, as well as to prevent the sliding of the glass. Of the latter part of the arrangement we are not quite sure. The price of the article is 3*s.*

The Commercial-road Tramway.—Now that the question of tramways for the metropolis is exciting so much interest, attention is again being turned to the granite tramway which has been for forty years in use in the Commercial-road. It extends from the West-India Dock gates to Whitechapel, two miles in length, and has been of great use. The road, however, is a wide one, and there is only a single line of tramway. The granite is now laid on concrete. It was designed and carried out by the late James Walker, F.R.S., and some time passed in the hands of Civil Engineers, but since 1850 it has been under the charge of his assistant and pupil, Mr. J. B. Redman, of Westminster. During the last twenty years it has been twice raised, re-dressed, and re-laid in concrete. Mr. Redman states that the tramway is in as efficient a working state as it was twenty years ago. There are several kinds of granite in it; and the result of experience with these is, that an inch of Aberdeen lasts ten years; of Herm, twenty years, Guernsey, forty; and cast iron, cold blast, fifty to sixty. Aberdeen granite requires 700 tons to crush 1 ft. super.; Herm, 900 to 1,000 tons; and Guernsey still more.

Island-making the Order of the Day.—The example of M. Ferdinand de Lesseps in France has produced more than one imitator. Every isthmus in the civilised world seems destined to have its throat cut. Panama has long been doomed; Corinth is a mere matter of time; and before long we may have to correct our geographies by describing Spain as an island. The last is a magnificent scheme, and to cost more than did the Isthmus of Suez. The project is for a canal from the Bay of Biscay to the Mediterranean, through 100 locks, the ships being towed by locomotives on the banks at four miles per hour. As for the Isthmus of Corinth scheme, advice from Greece state that the whole kingdom receives with a lively satisfaction the plan for cutting through these isthmus; and the initiative taken on the subject by King George is appreciated as one of the happiest ideas that could be realised. The *International*, we may here add, states that the King of Prussia has decided, with the advice of the Council of Ministers, on carrying out the projected canal from the Baltic to the North Sea. The works are to commence next year, and may be finished in 1878.

Towns' Sewage.—A deputation consisting of members of Parliament, mayors and town clerks of boroughs, and other local authorities in England, have waited upon Mr. Bruce, the Home Secretary, to urge upon the Government the necessity for early legislation to protect rivers and streams from pollution by towns' sewage; and in the evening they received the following report of the Rivers' Commission; then, that a short Bill be introduced to give temporary relief to local authorities executing sewage works, until a general measure be passed for the protection of rivers. The deputation was introduced to the Home Secretary by Col. Akroyd, M.P. for Halifax. Mr. Bruce assured the deputation that he considered the representations made were most important, and although he could not pledge the Government himself, he would confer with his colleagues, and acquaint the deputation of the result of such conference without delay. Sir William Dennison, the chief of the Rivers Commission, was present during the interview.

The Thames Embankment and its Railway.—A station is to be erected at the bottom of Norfolk-street for the railway. It is expected to be ready for public traffic in less than three months, the whole of the new thoroughfare from the Mansion House to Westminster Bridge to be completed by August. There is to be a station at the end of New Earl-street, and from this point the line passes under the street into Cannon-street, and thence, it is intended, to a City terminus near the Mansion House. Between the Temple Gardens and Blackfriars Bridge the line is close upon the low level sewer, and extraordinary precautions have been found necessary.

Kitchen Boiler Explosions.—Three hot-water engineers have sent us particulars of their several patent arrangements, by means of which they believe explosions are rendered impossible. We must leave them to make their inventions known in the ordinary way.

Proposed New Building Act.—The Metropolitan Building Bill, brought into the House of Commons by Sir W. Tithe, has been undergoing some trifling modification, which has delayed the printing of it.

Opening of the Royal Chapel in Westminster Abbey to the Public.—The dean and chapter have resolved, by way of experiment, to set apart every Monday for the free admission of the public, not only on other days to the nave and transepts, but to the Royal chapels, between the hours of service, from 11 a.m. to 3 p.m., and again from 4 p.m. to the closing of the doors at 6 p.m., during that portion of the year when the longer days admit of this arrangement. Stationary guards will be appointed to each of the Royal private chapels, to protect them from injury and explain objects of interest; and if the experiment should succeed, and if persons of means should be disposed to assist the chapter, the free access may be extended to other days. The new arrangements have already come into operation.

Decorations of the House of Commons.—In reply to Col. Sykes, in the Commons, Mr. Ayrton said there was considerable difference of opinion on the subject of the mosaic picture now placed in the Central Hall, some persons thinking it extremely beautiful, while others held a directly opposite opinion. Under these circumstances, a great deal of consideration would be required before any further expenditure would be incurred, and the House would have an opportunity of expressing an opinion before any further works were undertaken. Mr. Poynter was now engaged on the pictures for which he had received commission, but no further works in mosaic would be ordered. As regarded light for the pictures, the question was one that would involve much cost, and therefore required a great deal of consideration.

Sussex Archaeological Society.—A general meeting of the Sussex Archaeological Society was held on the 24th ult., at the Barbican, Lewes Castle, under the chair, when the rules whereby the Editorial Committee ceases to exist and the Finance Committee is enlarged. The Rev. E. Turner, of Maresfield, was appointed editor of vol. xiii., and the Rev. W. de St. Croix was appointed secretary of committee, and other officers of the society were re-appointed. It was decided that the annual meeting for the second Thursday in August should be held at Rye, with a visit to Camber Castle. We have not heard if any shame was expressed for the discredit that has been brought on the county by the uncalculated destruction of the original Saxon church of Worth Church. The Society on this occasion was found wanting.

The Birkenhead Free Library.—The annual report of this institution has just been issued. It commences with the gratifying statement of the early progress of the library, and the anxiety shown by the systematic readers and regular attendance of young people to get knowledge, have been most remarkable. The past year has seen a very considerable increase in the number of books issued. In 1869 the books issued numbered 46,576, against 45,146 in 1868, and 43,360 in 1867. A remarkable feature of the figures is that while there has been an increase in the total number of books given out, the number of works of fiction is considerably less. In 1867, 23,396 such works were issued, while in 1869 there were but 22,641.

Building on Unwholesome Land.—One of the points brought before the Home Secretary by the deputation of medical officers of health which waited upon him with reference to the Metropolitan Building Act, was the practice of erecting buildings upon deeply excavated ground which had been previously filled in with rubbish containing unwholesome decomposable materials, and to which we have often alluded. It also complained of the practice of building upon wet and undrained land. It was asserted that some of the surveyors of the metropolitan district boards, contenting themselves with the plan for house drainage, took so little further interest in the matter that builders either put no drains in at all, or made a pretence of putting them in without any communication with the sewer, or departed from the plans deposited from motives of economy.

Harbour Works at Alexandria.—The Khediv, as the Egyptian Pacha is now called, has ordered that the harbour works at Alexandria shall be immediately commenced.

Newspaper Press Fund.—The annual dinner will be provided over on the present occasion by Mr. W. H. Smith, M.P.

Destruction of a Glasgow Theatre by Fire.—The Alexandra Theatre, Glasgow, has been burnt down. It was a brick and wooden structure, and was destroyed in an hour. The London Dramatic Company were playing at the time. The damage is estimated at £5,000. The theatre had been closed at a quarter to eleven. About a quarter past twelve the fire burst out suddenly, and the building in a few seconds became enveloped in flames. The efforts of the fire brigade were mainly directed to prevent the flames from extending to the adjoining buildings. The theatre is stated to have been insured.

Building and Enlarging of Churches and Chapels.—At the last meeting of the incorporated society for promoting the enlargement, building, and repairing of churches and chapels, it was stated that grants amounting to 7,630*l.* (a sum larger than has been received in the same time), have been made within the year towards the erection of 39 new churches, the rebuilding 30, and the enlarging or otherwise increasing the accommodation in 86 other churches. The easily understood unpopularity of this society amongst architects (not attached to it) continues to increase.

The Look-out on Railways.—Sir: A and accident lately occurred on one of our metropolitan railways. A guard looking out from his van met his death: his head was dashed to atoms against a bridge. A good look-out could be constantly kept by having a looking-glass near the door: the guard keeping his eye on the glass would have the range of the line. By night as well as night-glass would be useful. Guards would then sit back to the engine, and see all forward free from biting winds, blinding dust, and dangerous bridges.—B. T.

The Art Exhibition, Derby.—The arrangements for the approaching Art Exhibition in Derby, are being pushed forward. The committee are drawing upon available resources for contributions. The "worthies" of the county will be represented. The catalogue will contain a brief notice of each from the pen of Mr. J. J. Briggs. There will also be a collection of drawings by students. The committee have decided to admit members of Schools of Art at 2*s.* 6*d.* each for the season. A collection of China, Derby, Derby Chelsea, &c., will be brought together.

Southampton Workhouse.—In reference to a statement at a meeting of the local board of guardians, noticed in our issue for 26th ult., Mr. Skelton, of Southampton, the architect of the workhouse, has written to the Board, explaining that he had only to provide a place for the temporary reception of inmates, and that for this the wards complained of were amply sufficient.

The Subsidence in Tarmill-street.—The falling in of the severe, caused by flooding of the Old Fleet, is ascertained to be the cause of the sinking of the ground in Tarmill-street, by which some dozens of houses and the wall of the Metropolitan Railway are to a certain extent endangered.

Prizes for Art-Workmen and Manufacturers.—The Council of the Society of Arts having in view the International Exhibition of 1871, have under consideration a scheme of prizes which, we venture to think, will demand the serious attention alike of art-workmen and manufacturers.

Castle Donington, Leicestershire.—A mill for spinning is about to be erected here, adjoining the Lamb Inn, which, it is believed, will prove a great boon to this hitherto depressed place. Mr. Bakewell, of Nottingham, is the architect, and the contract has been let to Mr. J. E. Hall, of the same town, with instructions to proceed at once.

Exhibitions.—The Exhibition by the Society of British Artists (Suffolk-street) will be opened to the public on Monday next, the 4th; as will that of works of the French and Flemish Schools (Pall Mall). The private view in both cases takes place this Saturday, the 2nd.

Garvel Park Graving Dock, Greenock.—We understand that Messrs. Shearer, Smith, & Co., of the Dalbeattie Granite Quarries, are the successful competitors for the supply of the granite for this extensive dock, which we believe will be the first dock on the Clyde entirely constructed of granite.

Chantry's Monument to Kirke White at Cambridge.—A vestry meeting of All Saints (parish has, after much discussion, adopted a resolution to the effect that the parish should accede to the wish of the representatives of the family of Kirke White and of the donor, Dr. Booth, of America, that the tablet be placed in the new Chapel of St. John's College, to which Kirke White belonged, on condition that the vicar and churchwardens of All Saints receive from them a legal discharge from all responsibility. While the monument was in private custody, it seems, a sum of 1,000*l.* was offered for it.

Lyons International Exhibition.—It is at last decided that this proposed universal exhibition is to take place next year. The designs for the building are ready, and preliminary measures are just commenced. The exhibition is to be open from the 1st day of May to the end of October.

The Portrait.—The portrait in our present number was produced from a *carte de visite* photograph by the process termed *Dallatyp*, an invention which, if not yet fully developed, has in it the germ of usefulness.

TENDERS.

For new chapel, refectory, dormitory, at St. Stanislaus's College, Beaumont. Messrs. J. A. Hanson & Son, architects. — Messrs & Sons (accepted) £6,804 0 0

For restoration of chapel, at Conington, Cambs. Mr. W. M. Farwell, architect. — Messrs & Sons (accepted) £382 15 0

For rebuilding the Fine Apple public-house, and two houses adjoining, Hercules Buildings, Lambeth. Mr. L. H. Isaacs, architect. Quantities supplied by Mr. L. C. Kiddist. —

Palman & Fotheringham	£3,515 0 0
Anderson & Sons	1,653 0 0
Holland & Hanson	1,508 0 0
Mansfield, Frye, & Co.	4,555 0 0
Phillips	4,520 0 0
Alford	4,520 0 0
Brown & Robinson	4,536 0 0

For residence at Eokhills, Sydenham, for Mr. R. Sutton. Mr. J. F. Bently, architect. Quantities by Mr. W. B. Catherwood. —

Residence.	Boundary Wall.
Buck	£2,140
Reble	4,557 0 0
Hookham	1,968 0 0
Mansley & Rogers	1,917 0 0
Cooke & Co. (accepted)	1,230 0 0

For the formation of roads and sewers upon an estate, at Hextrey, for the Right Hon. Earl Beauchamp. Messrs. Hammett & Lambert, surveyors. —

Newman & Mason	£11,060 0 0
Capper	8,959 0 0
Anderson & Son	8,953 0 0
Abbott	8,950 0 0

For Asylum of the Aged Pious Friends' Society, at Hextrey Hill. Mr. F. Boreham, architect. Quantities not supplied. —

Roberts	£11,000 0 0
Ferry & Co.	10,146 0 0
Jackson & Shaw	9,068 0 0
Williams & Son	9,067 0 0
Higgs	8,953 0 0
Ribe & Sons	8,940 0 0
Hill & Son	9,945 0 0

For new hall and warehouse, in Out-lane, Noble-street City, for the Coachmakers' Company. Mr. F. Chancellor, architect. —

Dove	£4,740 0 0
Hill & Son	4,957 0 0
Turner & Son	4,911 0 0
Macey	4,361 0 0
Brown	4,361 0 0
Conger & Cullum	4,278 0 0
Heslar	4,233 0 0
Conger	4,233 0 0
Cole & Son	3,978 0 0
Brown & Robinson	3,923 0 0
Crabb & Vaughan	3,476 0 0

For a house in Manor Park, Sutton, Surrey. Mr. R. Nash, architect. —

Cole & Son	£3,270 0 0
Marshall & Sons	3,056 0 0
Roberts	2,910 0 0
Coff, Potter, & Co.	2,648 0 0
Woodward	2,647 0 0
Deans (accepted)	2,135 0 0

For villa residence, High Wycombe. Mr. A. Vernon, architect. —

Goddin	£1,455 0 0
River & Son	1,455 0 0
Beavell	1,350 0 0
Lacey	1,300 0 0
Wood & Co.	1,289 0 0
Spicer	1,250 0 0
Dover	1,252 0 0
Loomley	1,251 0 0
Woodbridge	1,250 0 0
Ferguson	1,247 0 0
Nightingale	1,234 0 0
Copper	1,236 0 0

For erecting six cottages and shops at Burgess-hill, Sussex, for Mr. Stephens. Mr. J. Tanner, architect. — Norman (accepted) £950 0 0

For new wing, Edmonton, Workhouse. Mr. Knightley, architect. Quantities prepared by Messrs. Currie & J. E. Orme. —

Samson	£3,472 0 0
Howard	3,125 0 0
Crabb & Vaughan	3,125 0 0
Bentley	2,906 0 0
Waters	2,903 0 0
Simons	2,903 0 0
Nightingale	2,903 0 0
Pattinson	2,929 0 0
Edison & Chapman	2,781 0 0
Wood	2,780 0 0
Whithead	2,750 0 0
Woods	2,750 0 0
Beyers & Humage	2,750 0 0
Cock & Green	2,607 0 0
Lockyer	2,497 0 0
Johns	2,395 0 0

For house at Chertsey, for Mr. Worthington. Mr. T. Wesscott, architect. —

Hughes & Sons	£2,635 0 0
Simons	2,650 0 0
Nightingale	2,495 0 0
Goddard & Son	2,370 0 0
Lockyer	2,370 0 0
Martin & Wells	2,385 0 0

For fire brigade station, Kewley-road, Deptford, for Messrs. Currie & J. E. Orme. —

Harcy & Gould	£2,430 0 0
Rickaby	2,153 0 0
Widdows	2,153 0 0
Thompson	2,103 0 0
Sharpington & Cole	1,977 0 0
Nightingale	1,967 0 0
Tongue	1,940 0 0
Blackmore	1,936 0 0
Crockett	1,850 0 0
Harris & Edwards	1,844 0 0
Ball	1,839 0 0
Crabb & Vaughan	1,757 0 0
Simons	1,750 0 0
Hughes	1,680 0 0
Whithead	1,650 0 0
Lockyer	1,650 0 0
Atcham & Walker	1,645 0 0

For school buildings, South Hackney. Messrs. Seale & Son, architects. —

Palman & Fotheringham	£975 0 0
Brayley	950 0 0
Newman & Mason	935 0 0
Merritt & Ash	795 0 0
Edison	775 0 0
Duggs	772 0 0
Higgs	764 0 0
Deane	753 0 0
Favitt	684 0 0

For dwelling house and stabling, Croydon. Messrs. Seale & Son, architects. —

Myers & Sons	£3,704 0 0
Nightingale & Fotheringham	3,380 0 0
Macey	3,370 0 0
Dove, Brothers	3,245 0 0
Newman & Mason	3,230 0 0
Cole & Son	3,230 0 0
Higgs	3,149 0 0
Edison	3,149 0 0
Ward	3,105 0 0
Pattinson	3,058 0 0
Holliday	3,015 0 0
Pollard	3,005 0 0

For restoration of Biggleswade Church, Beds. Messrs. W. G. Habershon & Pate, architects. —

Foster	£2,445 0 0
Fair	2,445 0 0
Upperton	2,515 0 0
Carey	2,460 0 0
Joy & Co.	2,460 0 0
Tanner	2,445 0 0
Twelvetree	2,358 0 0
Nass & Co.	2,311 0 0
Moore	2,284 0 0
Pattinson	2,227 0 0
Carter & Co.	2,117 0 0
Tooley	2,070 0 0
Edley	1,944 0 0

For fifty-six cottages at Kiteon Park Colliery, near Sheffield. Messrs. W. G. Habershon & Pate, architects. —

Pattinson	£3,550 0 0
Best	4,487 0 0
Dawson	4,590 0 0
Newman & Mason	4,750 0 0
Macnott	4,537 0 0
Wetherley	4,537 0 0
Hughes	4,294 0 0
Stirling	4,288 0 0
Hobson	4,197 0 0
Wade	4,076 0 0
Brown	3,989 0 0
Kem	3,950 0 0
Cuthberts	3,787 0 0

Being £5*l.* 1*s.* 6*d.* per cottage, all included, with fittings and outbuildings, and stone complete.

For Wesleyan Chapel, South, Cardiff. Messrs. W. G. Habershon & Pate, architects. —

Heaver & Son	£4,872 0 0
Edley	4,465 0 0
Seeger	4,460 0 0
Smith & Fling	4,428 0 0
Edley	4,390 0 0
Shepton	4,279 0 0
Stubs	4,258 0 0
Thompson	4,150 0 0
Franklin	4,095 0 0

For Congregational Chapel, Pembrey, Wales. Messrs. W. G. Habershon & Pate, architects. —

Whitaker	£438 0 0
Phillips	433 0 0
Davies	423 0 0
Rowlands	394 0 0

For Congregational Chapel, Mill-street, Newport, Monmouthshire. Messrs. W. G. Habershon & Pate, architects. —

Prior	£1,150 0 0
Allen	1,122 0 0
Longwood	1,070 0 0
Jenkins	1,067 0 0
Little	1,003 0 0
Whitaker	988 0 0
Williams	986 0 0
John	986 0 0
Greenham	980 0 0
Boat	960 0 0
Prior	950 0 0
Thomas	945 0 0
Hayell	940 0 0
Webber	931 0 0

For two villas, Gold Tops, Newport, Monmouthshire. Messrs. W. G. Habershon & Pate, architects. —

Whitaker	£34 0 0
Trimmer	315 0 0
Richard	316 0 0
Hayell	473 0 0
Adies	454 0 0
Greenham	419 0 0
Longwood	398 0 0

For restoration of Gayton Church, Stafford. Messrs. W. G. Habershon & Pate, architects. —

Crithlow	£1,960 0 0
Edley	743 0 0
T. & Co.	723 0 0
Ratcliffe	690 0 0
Tankard	690 0 0
Whitham	644 0 0

TO CORRESPONDENTS.

Published on Friday.—We will send brief notices as, through our paper, how to put any shop windows or that people cannot look through it. I have tried with paint, but in winter is poorly after a few months.—J. R.

J. V. (Buckton).—G. R. (Buckton).—Q. R. (Buckton).—P. R. (Buckton).—M. R. (Buckton).—N. R. (Buckton).—O. R. (Buckton).—R. R. (Buckton).—S. R. (Buckton).—T. R. (Buckton).—U. R. (Buckton).—V. R. (Buckton).—W. R. (Buckton).—X. R. (Buckton).—Y. R. (Buckton).—Z. R. (Buckton).—A. R. (Buckton).—B. R. (Buckton).—C. R. (Buckton).—D. R. (Buckton).—E. R. (Buckton).—F. R. (Buckton).—G. R. (Buckton).—H. R. (Buckton).—I. R. (Buckton).—J. R. (Buckton).—K. R. (Buckton).—L. R. (Buckton).—M. R. (Buckton).—N. R. (Buckton).—O. R. (Buckton).—P. R. (Buckton).—Q. R. (Buckton).—R. R. (Buckton).—S. R. (Buckton).—T. R. (Buckton).—U. R. (Buckton).—V. R. (Buckton).—W. R. (Buckton).—X. R. (Buckton).—Y. R. (Buckton).—Z. R. (Buckton).—A. R. (Buckton).—B. R. (Buckton).—C. R. (Buckton).—D. R. (Buckton).—E. R. (Buckton).—F. R. (Buckton).—G. R. (Buckton).—H. R. (Buckton).—I. R. (Buckton).—J. R. (Buckton).—K. R. (Buckton).—L. R. (Buckton).—M. R. (Buckton).—N. R. (Buckton).—O. R. (Buckton).—P. R. (Buckton).—Q. R. 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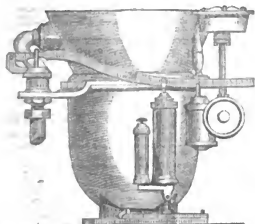
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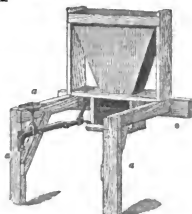


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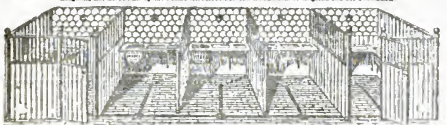
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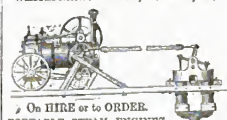
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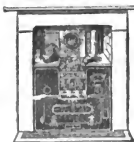
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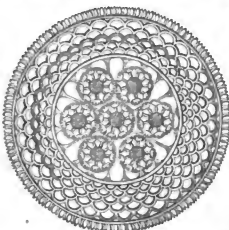
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The Builder.

VOL. XXVIII.—No. 1418.

Picturesque Designs.



DELIBERATE and intentional effort after what is termed "the picturesque" we hold to be, in the main, a very delusive pursuit for any architect to engage in. It is true that our prejudices on this head may have been excited to an unjust extent, by the average published results of such a pursuit. We can call to mind few instances of what are termed picturesque designs for villas, and so forth, which have not been literally illustrated the term applied to them,

in that they have been fit for a picture, and for nothing else. The quality of picturesque itself is, indeed, as regards architecture, at least, a sort of artistic *ignis fatuus*, indefinable by those who are in chase of it; a fact which is admitted by the author of the volumes before us,* who observes at the commencement of his introduction that "the architect usually considers that if his building look well when seen by moonlight, or through the medium of a foggy or dull atmosphere, it is picturesque, and he is satisfied." And though the author professes to elucidate more correctly the theory of the picturesque, and even tells us (p. 24) that "the general principles for obtaining that effect have been pointed out," we do not find ourselves much nearer the mark after reading his introductory essay. His very first example is from the ruins of a Roman temple, which may, no doubt, be "highly picturesque" when time and weather-stains have done their work upon the masonry, and when "the even regular lines of the doors and windows are broken, and through their ivy-fringed openings is displayed, in a highly broken and picturesque manner, that striking image described by Virgil:—

*"Apparet domus intacta, et atria longe patentes,
Apparet Prætorii veterum penetralia regum."*

But with such picturesque dilapidation, architecture, as we understand the term, has nothing to do; and as to the quotation from Virgil, we have always considered the real charm of that magical passage to lie precisely in the architectural effect of the stately palatial vistas and corridors, suddenly opposed in our fancy to the picturesque glare and confusion of the battle and conflagration outside. Waiving this, however, it may be said in general that picturesque effect, if sought for as a primary object by the architect, is very likely to be gained at the

expense of, and in opposition to, the legitimate architectural desiderata both of construction and design; but that, on the other hand, where truthful and sober architectural design and construction are sought for in the first instance, the result is very likely to include also what most people will admit to be in one sense, picturesque, without too closely defining the term. Indeed, our author confirms this view himself, when he observes (p. 9) that the Gothic style of architecture "is remarkable for its picturesque character, and may fitly be adduced as an example of that quality in the absence of an exact definition of the term;" since there is no style whose main features are more directly the outgrowth of constructional influence and requirements. If, however, Mr. Richardson fails to make us converts to the picturesque school, we can recognise in his book, nevertheless, a substratum of sound common sense in practical matters, with a good deal that is suggestive as to the artistic planning and treatment of domestic edifices.

It is only fair to observe that the author professes to put forth this work rather for the guidance of non-professional than of professional men. Commenting on the fact, familiar to every architect, that a client is in many cases totally unable to explain intelligently to his architect what it is that he requires, or even to form a conception of it himself, Mr. Richardson thinks, nevertheless, that,—

"When a variety of designs is placed before the eye of any intelligent person the act of selection becomes easy. Although no single plan may succeed, a combination may suggest itself, and the architect can then readily work on something like a sound foundation, and with the hope of success. This work is intended to supply such requirements." (p. 26.)

To this end readers are presented with forty-one designs, accompanied with plans (and in some cases details of ornamentation) for various kinds of erections, including villas of large and small size, summer-houses, bath-houses, garden-seats, stabling, &c.; in very varied styles, in some cases somewhat abnormal, and nearly all more or less illustrating the author's predilection for that rather irregular and sometimes fantastic treatment of general designs or of detail which in most minds is associated with the term "picturesque." To some of the best of these justice is scarcely done by the engravings, which (the perspective views especially) show no very great finish of execution; and the author had better have cut out altogether the fanciful frontispiece opposite the title-page, and the view of a "Greek Temple" preceding the introduction; the latter engraving in particular is sufficient to prejudice any architectural reader against the rest of the work. But amongst the multifarious illustrations which follow are some which possess a good deal of novelty and originality. With regard to the first few designs for small lodges, cottages, and houses, the demon of the picturesque has played his usual tricks with the designer, suggesting the employment of unacquainted boughs in the place of pillars to porches, and other "gauds" which we are not worthy to denounce. But the arrangement and design of the lodge (No. 10), intended for a triangular site commanding three roads of approach, is simple and ingenious, and the effect (we should judge) pleasing, in spite of the unwhimsical posts to the porches. No. 11, for a gateway and lodge in the castellated style, is also pleasing and effective. "The family architect," observes the author, "in such cases, will have to make various sketches before one is selected that gives general satisfaction;" a statement which a good many "family architects" can probably corroborate from sad experience. Few architectural students of the present enlightened epoch will see without a smile the design (No. 12), for a stove bearing the outward form and semblance of a half-length mailed and helmeted figure, though some old

stagers will perhaps find a sort of relief, in these tremendously virtuous days, in coming across a thorough bit of deceptive whimsicality such as this. Passing over some designs calling for no special comment, we come, at No. 21, to a pretty and picturesque idea for a bath-house and summer-room, intended to be erected on a site in a park in Kent, enjoying an extensive prospect.* The ground-floor forms the bath, supplied by a natural spring of water, and a separate entrance leads up to the sitting-room above, corbelled out beyond the line of the lower story. Of this we give a view; the plans have their titles interchanged in the book, by some error. Details also are given on a larger scale in the book, of the panelling, &c.; the whole, though a little thing, is a pleasing specimen of English half-timbered design. A more elaborate production of the same nature is No. 23, "a villa in the old English wooden style," suggested by an elevation given in "John Thorpe's Sketch-Book." This is a tolerably large dwelling-house, in external appearance a timber and plaster erection, although in fact "the timber was merely intended as an appendage to the brickwork. The exterior walls were to have been two bricks and a half thick on the ground-floor, two bricks above. The wooden posts and pans were let into the external half-brick, and well built in; the ornamental woodwork in inch oak, screwed to the wood quartering; the space between them filled with plaster, with an ornamental pattern stamp on it; and the columns and entablature were of oak." A very symmetrical plan gives more soberness and unity than would otherwise belong to the style of decoration employed; and a noteworthy point in the design is the use made of two octagonal cupolas which rise (on the garden front) slightly above the main roof-ridge, as what the author terms "garden-bower" rooms. The roofs of these rooms were to be constructed in iron and glass, and covered internally with wire trellis-work, up which fruit-trees could be grown. The perspective view placed at the commencement of the volume (erroneously entitled as "elevation"), and which we reproduce, gives a good idea of the design; but in this and the elevations it is apparent that the designer has not sufficiently remembered that forms which look well on a small scale in decoration may be quite unsuitable on a larger scale: witness the large scrolls and curls of the ornamental woodwork. A similar defect spoils the best of his designs for a garden-seat (No. 31), which is only hindered from being really pleasing and successful by the Brobdingnagian scroll-work at the top, which, besides its inherent clumsiness, reduces the scale of the whole thing. A design (No. 35) for a Riding-house and Stabling is worth attention for its simple plan combined with more of architectural grouping than is always seen in buildings of this class, and an elaborate and grand scheme for a sculptor's villa (No. 29), may prove suggestive to those who have to carry out any such thing on a large scale. This is a plan for a large and almost palatial villa, having a long sculpture-gallery in the centre, between the suites of rooms, occupying the whole height of the building, with an open gallery running round it on the upper floor, the ground floor opening at one end through an ante-room into a spacious circular conservatory; while at the opposite end the vista is terminated by a grand group of sculpture, round which, as a base winds the ornamental staircase leading to the upper gallery.

A scheme to which the author attaches some importance is that described in the course of the chapter on "Queen's Gate Lodge, Hyde Park," for laying out the site between Brompton and Kensington originally purchased at the instance of the late Prince Consort for the erection of a Central Hall of Arts and Sciences, and other

* See p. 269 for illustration.

* "Picturesque Designs for Mansions, Villas, Lodges, &c., with Decorations, internal and external, suitable to each Style." By C. J. Richardson, Architect. London: Ashby & Co.

cognate institutions thereupon. Mr. Richardson thinks it "cannot be supposed that a sum of 340,000, would have been expended by the nation for the purpose of giving the Horticultural Society a perpetual lease of the best portion of the estate purchased." It is already evident that the gardens are not well situated there. . . In much less than fifty years their grounds will, probably, be the centre of London, and consequently the noble conception of his Royal Highness has still a good chance of being carried into effect." Considering that the term of years proposed for the transformation is one that will, it is to be feared, preclude the idea of our amiable author himself reaping any benefit from it, the interest he evinces in it, at all events, disinterested; and those who wish to see at once a grand and useful place formed on the site alluded to, may thank him for stirring up their pure minds by way of remembrance, touching its possibilities, even if they are not satisfied with his scheme. This latter, however, so far as we can judge from a somewhat meagre bird's-eye view (page 106), representing the design "intended to embody the views of his Royal Highness Prince Albert," or rather that of one of it which faces Queen's Gate, would have, if carried out, a sufficiently dignified and architectural effect, besides being arranged (by the author's description) with a commendable attention to convenience and symmetry of plan. The level of the ground at the north at Kensington is about 36 ft. higher than the portion at Brompton—

"By putting the level of the ground of the new building about 10 ft. above that of the Kensington road, a sub-basement would have been obtained, over 35 ft. in height, affording ample space for storing and storing works of art, as well as for preserving objects to be exhibited, or a great portion of the space of the building, should the latter be wanted for any special purpose. The Hall of Arts and Sciences was to be placed in the centre of the main of the building, and the portion to be seen in the view is the upper half-hand corner. This room was to be made 300 ft. in length by 150 ft. in width. Two galleries for painting, each 1,000 ft. in length by 80 ft. in breadth, were to be placed on each side of the central hall. The sculptures from the British Museum were to be deposited in the central smaller hall of approach, and various societies were to occupy the side wings, each having its meeting and lecture rooms, and a few offices and apartments. The public were to assemble in the portico in the view, and the carriages of the professors at the gateway in front."

Let us hope, in regard to this last provision, that all the professors possess carriages (a point which is apparently assumed); in which case this wholesale professional chariotizing would perhaps be one of the finest parts of the show. But the whole scheme, if savouring a little of the spirit of Haussmann as to its grandeur, is one which is worth while to keep before people's minds.

Our author's practical observations upon points connected with the comfort of houses are many and various, and such as we cannot go into at any length. In ventilation, his principle is that the staircases, and the central vestibule of a dwelling, "from this general opening communications can be made into, and from, each apartment by apertures placed in some convenient position in each room;" the air being warmed and ascending on entering the staircase-well. But care must be taken not to make too wholesale an inlet of air for ventilation, in this climate. A case once came under our notice, in which a gentleman who was determined to have his house systematically warmed and ventilated, had it built with windows permanently closed and air-tight, all air being admitted through large gratings in the basement story, warmed there by the passage of the staircase-well through the house. But the first gusty day after he went into occupation his ventilating gratings were to be seen stuffed up with straw and matting; the east wind had begun to have its own way all through the house, and he had found that the passage of the air was too much ventilation. In a long chapter on "the Fireplace," and all connected with it, the author replies to the supposed question, "What has a work on picturesque architecture to do with either smoke or sewer gases?" by affirming, with much reason, that buildings never will look picturesque while there are great patches of soot, nor while stuck over with "tail-boys." These last are, indeed, the bane of the architect; but it was remarked in these pages years ago, that architects in general had come to no conclusion as to how to design chimneys; and we do not seem to be much nearer the matter now. "The public," says Mr. Richardson, "have so long been accustomed to be choked with smoke, and their health affected by deleterious gases, that they look upon the proposal of any scheme

to secure pure air as the food hallucinations of dreamy philosophers or inexperienced Utopians." His schemes for ensuring up-draught and preventing down-draught in chimneys, for collecting the soot before it reaches the external air, for preventing and utilizing it (of course we suggested of doing this in to pass the smoke through a light spray of water, by a method illustrated by diagrams, and before now mentioned by us), are worth attention as suggestions, at all events; in these matters, the proof of the pudding is in the eating. With regard to the warming of buildings, we are disappointed given of the application of the hot-water circulating system, "introduced into his dwelling by one of our most eminent philosophers," which deserves to be noted. The whole length of piping was, by means of a multiple coil, divided into four circulations, any of which could be turned on or off at pleasure. Thus—

"In winter the bath-room received a portion of piping, so that coals and pipes, even in the dampest weather, always kept dry. One circulation was sent through the dining-room a short time before it was used; it was after a certain time turned off and sent through the bedroom and dressing-room. The various rooms in winter were kept at different temperatures, the dressing-rooms were a few degrees warmer than the bedrooms; an indication for a very early (adroit philosopher) by means of a lever attached to the bars of the grate. Coal or coke was supplied, and the air-valve opened. The stop-cock was turned off and sent through the bedroom and stairs. At about eight o'clock in the evening the stop-cock was turned to heat the oil of the bath, and at eleven the stop-cock was turned off and the lever was supplied, the chimney completely closed, and the damper if necessary. By means of the fire turned very slowly during the whole of the day, the bath-chimney received the heat of the day, thus generated. These conveniences and luxuries might be more generally applied than they are at present in the dwelling."

In which latter remark most readers will concur; indeed, we may say with Bunyan's Pilgrim that "the hearing of these things is enough to ravish one's heart."

We hope that no non-picturesque reader who may get hold of Mr. Richardson's book will expect his architect to adopt the suggestions made therein as to the use of mosaic tiles in floor and wall decoration. The short chapter on this subject is the most singular instance of the recommendation by an architect of precisely the wrong thing in architectural taste that we have ever seen. The author speaks with contented complacency of the adoption of conventional decoration; and, by way of making them "more artistic and pleasing," he proposes a sort of realistic design imitative of knots of buds and flowers carried through irregularly from one tile to another; or, in the case of walls, an apparent trellis, with leaves and flowers interlacing upon a blue ground; "the design would then show a flowered trellis against the sky;" or, in other words, make the wall look like what it is not, and give the appearance of relief where everything should be quite flat. This would be very well for a summer-house in a German tea-garden, but all such permanent mural decoration in a really architectural building should surely partake of a strictly architectural character. Our author, however, is in search not of the architectural, but of the picturesque, and hence these aberrations. With regard to ornament in perforated woodwork, too, which Mr. Richardson gives us sundry little French specimens as illustrating the superiority of our neighbours in this way, we must say that we have seen far better ornament of this kind out by English workmen from the drawings of English architects. The specimens given by Mr. Richardson are coarse and vulgar in place of comparison. This sort of ornament requires to be treated with delicacy, and not cut in large or too irregular patterns, or it looks ragged and clumsy. Those who may be tempted, in a search for the picturesque, to make trial of the old-fashioned English timber style, should be cautious so to tie in their fronts to the beams and joisting of the floors as to make the whole one construction, horizontally as well as vertically, otherwise in course of time the front will show a tendency (as some of those in Chester have long done) to hang over and part company with the rest of the building.

Lastly, speaking generally, we may say that though there are in the volume before us things which we do not approve, and which few architects of the younger generation will concur in, the latter may very well pardon a little that is "old fashioned" for the sake of gaining a good many suggestions, especially upon some practical points, characterized by much common sense, and which may stimulate them to give attention to points which they may have been too ready

to consider as secondary and uninteresting. Mr. Richardson is an old labourer in the architectural field, and has done useful work in his time.

There are a good many printer's errors in the book, some so very glaring as to render it evident that circumstances must have interfered with the author's final revision. "French marionette" for "maisonnette" (p. 251, and in the index *seq.*) and "drainage" for "drain-eyes" (p. 357 et al.), are among the worst; and there are some others which will be apparent to the reader.

UNIVERSAL ART INVENTORY.

In a recent number of this journal (p. 117, *ante*), while giving an analysis of the provisions of the Government measure for the general primary education of the country, we incidentally referred to the efforts of the Science and Art Department of the Government for the spread of technical instruction, as being intimately connected with the general educational state of Great Britain, and successful during the brief period covered by the year.

While the definitive plan of our future primary instruction is yet under discussion, the labours of "the Department" have entered on a new, and a very important, phase. If we regard the South Kensington Museum as a great establishment for the education of the workmen by the eye, an object in the attainment of which it is certainly without a rival in the world,—it may yet be objected that the advantages which it offers are confined to the residents or visitors of London, supplemented only by that degree of stimulus which may be given to the Art education of the provinces by the circulation of objects on loan.

To obviate this objection, the attention of the managers of the Institution has been directed to the Literature of Art. We are not now referring to the Art Library itself. Every library is necessarily local in its main utility. But a series of special catalogues, each comprehending an exhaustive description of some minor division of the collection, is now beginning to appear. Several valuable monographs of this nature have been very recently completed, and others are in course of preparation. The results of the whole will be a complete and classified description of all the costly treasures collected beneath the roof of the museum as will be of the utmost value to students who are unable to visit the spot, and of scarcely less notable service to those who are able, when in the museum, to devote only a limited time to the study of any particular branch of art.

Among these literary products of the museum, five works dated in the present year are now before us. Of these the first, or at all events the most voluminous, is entitled "The First Proofs of the Universal Catalogue of Books in Art compiled for the Use of the National Art Library and the Schools of Art in the United Kingdom. Vol. I., A. to R." Then we have a catalogue of the gems and precious stones bequeathed to the South Kensington Museum by the Rev. Chauncy Hare Townsend, M.A., drawn up by his friend Prof. of Mr. James Tennant, F.G.S., Professor of Geology, King's College, London. A descriptive catalogue of the musical instruments, illustrated by eighteen cuts, has been prepared by Carl Engel. A new edition of the "Guide to the Museum" brings down this useful manual to the present date. And an entirely new list of the objects in the museum, under the startling and ambitious title of a "Universal Art Inventory, consisting of brief Notes of Works of fine and ornamental Art executed before A.D. 1800, chiefly to be found in Europe, especially in connexion with Architecture, and for the most part existing in Ecclesiastical Buildings." This work has been edited by Mr. C. O. Carter.

The origin of the Art Inventory was a request addressed by Earl Russell in 1861, on the motion of Earl Granville, the Lord President of the Council at that date, to her Majesty's representatives at Paris, Dresden, Berlin, Munich, Turin, and Rome, that they would forward to London catalogues of the galleries, museums, and collections of objects of art now existing in the chief cities of Continental Europe. It was proposed that the information thus obtained should be arranged in the form of an inventory, which would be of service not only for the United Kingdom, but for the whole of Europe. The replies to their inquiries were satisfactory in one respect, and in one alone. They distinctly show that, whatever perfection may hereafter be

attained by so admirable a scheme, it is to this country that not only the origination of the idea, but the first blocking out of the plan must be exclusively attributed. However backward we may ourselves have been in preparation of records of the art of the world, we have, at all events, been the first, not only to detect the deficiency, but to take measures for its removal.

Mr. Odo Russell sent to the Foreign Office seven catalogues of public galleries, and five printed and three MS. catalogues of private galleries, in Rome. He observes that the Vatican catalogue of antiquities is unworthy of the collection. That of the Capitoline Museum is out of print. The Lateran Museum, that of the Accademia delle Belle Arti, the Galleries of the Palazzo Reale, of the Villa Albani, and the frescoes in the public and private palaces of Rome, are uncatalogued. Murray's Handbook is quoted by Mr. Russell as containing the best account of the objects of art in Rome.

From Berlin Sir A. Buchanan returns twelve catalogues of pictures, sculpture, and antiquities, and a reference by Dr. Waagen to a German work, "Deutsches Bilder-Baal Verzeichniss der in Deutschland vor handenen Gekildert verstorbenen Maler," an expected new edition of which is to contain a list of the works of the artists. The "Art Topography" of Germany was also recommended by the Minister of Public Instruction; but "a collection of trustworthy and complete material, in the sense wished by her Majesty's Government," is only regarded by his Excellency as "a work which would take up a great space of the time of persons educated for this purpose." (The English of the communication appears to be that of the Prussian minister.)

The Italian Minister for Foreign Affairs communicated to Sir H. Elliot fifteen printed, and eleven MS. catalogues of paintings and "opetti di arte," with the explanation that none of the galleries and museums of the Italian States possessed complete printed catalogues, and that a detailed description of their treasures would be "a work so colossal and expensive that it cannot be undertaken at present." It may be observed in passing, that no Italian description appears to exist, either of the fine armoury at Florence, or of the fine collection of paintings in the Palazzo Madama in that city.

From Munich, the information is yet more meagre; being confined to the suggestions of Professor von Heffner Alteneck as to the mode of complying with the wishes of the Committee of Council on Education, and a promise that Baron Schenk will confer with the Minister of Public Works on the subject.

Thus, in the main, Mr. Murray's hand-books are the only generally available guide for the investigation desired by the Science and Art Department. They have been freely quoted in the compilation of the "Universal Inventory."

Mr. Cole has laboured with characteristic courage and perseverance to get up the first black cloth shown to exist. We have now before us Parts I. and II. of the "Inventory," treating respectively of mosaics and of stained glass. "The work," the preface very properly states, "must be considered as a beginning, and is not complete; notices of objects which are omitted, and corrections, will be thankfully received." As it is, it may be considered as an index to the literature of the subject; as an identification, rather than as a description, of the objects named; and, above all, as a guide to the traveller, the tourist, and the local observer and amateur, who may be educated in art, not only to what to visit, but (which is far more important) what to describe. The series of communications which we trust that the publication of this "Inventory" will provoke may lead, in course of time, to the completion of a really exhaustive catalogue.

The inventory of "Mosaic on Walls, Pavements, Mosaic Encaustic, &c., Cabinets, &c.," is preceded by list of sixteen or seventeen publications which have been consulted for a work. This list, however, is far from including all the authorities referred to in the text. It mentions no catalogues. An addition containing the titles of such of those documents as have been collected would be of great utility. The MS. notes which are cited might also be noticed in the list. On the very first page is a reference to A. Laborde, "Mosaïque d'Italie," a work repeatedly cited, but not to be found in the list, which will, no doubt, be largely supplemented in future editions.

In fact, it is evident that seventy-four clearly-printed pages can only contain, as it were, the

first draught of an inventory of known mosaics. The memory of almost every traveller may be expected to furnish him, even at a glance, with additional contributions, that will no doubt be gladly welcomed by Mr. Cole. Thus, we may mention that at Brindisi, which interesting city is not named in the inventory, there exists, or existed in 1858, on the floor of the cathedral, one of the largest pieces of mosaic pavement known in Italy. In that year the Archbishop of Brindisi was proposing to destroy, or to cover this grand relic of ancient art, in order to remove the slight irregularity in the floor caused by the partial subsidence of the mosaic. In many parts of Southern Italy remains of "antichità" are abundant. They are protected by the law, and almost invariably respected by the peasantry—a striking lesson to our own barbarous rusticity. Of the famous submerged pavement of the Temple of Neptune, at Sorrento, we are not sure that any account has been made. The superb mosaic floors of the Roman villa which was discovered in the Piazza Vittoria, at Palermo, in December, 1868, were described in our own columns (*Builder*, No. 1391, p. 779), and should be mentioned in future editions of the Inventory. Their omission in the present instance is a very serious defect. The list of the cities in which they are described, does not contain the word "Mosaic," as a very brief notice from our pages of the discovery of a fragment of pavement at Soodland, on the Medway, is extracted with due acknowledgment. The journal of the "Scavi," now in progress at Pompeii, is another work which should be consulted as to mosaics. It is contained under the able supervision of the *Chevalier Fiorelli*.

Again, under the head "London," to the mosaics dedicated should be added some account of one discovered last year, at the depth of 17 ft., on the line of the new street from the Royal Exchange to Blackfriars. This ancient pavement is 10 ft. square, measures 10 ft. square, and it appears yet to have recovered.

The pavement in question closely resembles, in some particulars, former examples of Roman mosaic, which may be seen at the Guildhall Museum. In other respects it is peculiar; and in nothing does it so distinctly bear the stamp of a very remote past as in the fact that it is composed partially, if not wholly, of the fragments of buildings older than itself.

The materials of this relic consist of irregular tesserae, of some 1 in. square, of four distinct colors. The darkest of these are formed of portions of a dark grey stone, resembling Welsh slate. Next come a lighter colored stone, possibly Keen's Rag. Then we have a white material, apparently chalk. With these natural substances are interspersed portions of pottery or broken tile, not well-shaped, well-burnt tesserae, but blocks cut by the axe or the hammer, and as rough and irregular in their approach to a square form as are the stone blocks which form the walls of the ruins of the city. The fragments were probably not exposed to view, or formed of larger sized blocks of stone and of brick, and the rude nature of the work points to its execution by British workmen under Roman direction.

The centre of the pavement was occupied by a circle surmounted by a cross. It can not be asserted that this is a positive, undeniable Christian emblem. It closely resembles the five shields which are borne cross-wise in the arms of the kings of Portugal. The centre compartment is of a lighter color than the four limbs. Still, whether existentially or not, it is an actual cross, and the fact is one that has hitherto escaped notice.

Around the cross are rings of the several colors employed in the pavement, depressed heart-shaped figures, and an attempt at the production of a cable pattern, a resemblance to which is to be found on some of the other specimens now in the Guildhall Museum. In the present case, however, the effect is the rather of a series of complicated knots than of a cable. Irregular polygonal figures fill up the pattern. The work, though rough, is solid in execution, and clearly indicated, however rude, in design. Its maximum antiquity it is, of course, easy to fix—its actual date is more doubtful. The rise of the streets of the City to the level of the height of 17 ft. is a very instructive fact.

Twenty pages of the "Universal Art Inventory" are occupied with the mosaics in the Roman States, for which numerous authorities are cited. To these, in the next edition, should be added the "Historical Photographs" of Mr.

John Henry Parker, the third part of which series was published in 1860. A large proportion of the mosaics which they represent are older than the twelfth century, and some of them date from the reign of Constantine. The Paschal candlesticks and tombs of the Gossoli family, enriched with admirable ribbon mosaic, are not to be paralleled out of Italy. The reference to an accurate representation of so many of the objects indicated in the "Art Inventory" will hereafter prove a valuable addition to the information which it already furnishes.

The notes and lists of the stained glass is preceded by a list of works in the Art Library, containing information on the subject, amounting to sixty-six, besides serials. The approaching completion of the Universal Catalogue of Works of Art, which may be expected in May, and which will contain the titles of 70,000 books, will allow of the preparation of an exhaustive list of the bibliography of each special branch of the Universal Art Inventory,—a feature that will add immensely to its value. It will be observed that in this first edition the titles of books on mosaics, which are quoted, form a list of those which have been consulted for the formation of the Inventory, while the list of the names of the authors of the books is to be added to the list of the titles of the books in the Art Library. No doubt in future all the literary information will be arranged upon the same plan.

Seventy-five pages are occupied with the inventory of stained glass, exclusively in windows. The additions to be made in future editions will be very considerable. The list is, very truly, arranged as to include references to the history of famous windows now, unfortunately, destroyed; as in the case of the Chapel of the Abbey of Fontevault, which contained three windows of twelfth-century work no longer existing. Under this head future editions should contain a reference to the stained glass windows of the ancient Chapel of Beaufort (Arundel) (the oratory of the Royal House of Beaufort), so remarkable from the tradition that on the day of the murder of King Henry III. (18 August, 1269), a flash of lightning struck the glass, and shivered from the coat of arms the blazon forming the heraldic difference of the Bourbon Prince, Louis, Duke of Bourbon, France, and the blow of the assassin, entitled Henri of Navarre to assume.

The ecclesiastical buildings of the Spanish and Italian peninsula contain a large amount of glass as to which no index is as yet accessible. Batalha, in Portugal, is mentioned as having had its windows of the greater part irreparably injured by the French. In no country has the splendor of art been lavished more freely upon churches and convents than in Portugal, and there must yet be much to repay a conscientious search, in glass no less than in encaustic and inlaid marble. Genoa, too, is unnamed in the inventory. The rich and beautiful windows of the great church of the Assunta cannot readily fade from the memory of the traveller; and there must be much more old glass yet existing in this City of Palaces.

As to English stained glass, the editor will, no doubt, receive numerous contributions towards an enlargement of his catalogue. Not to speak of examples of the period of value, or of history of various dates, such as are to be found in the Mortuary Chapel of the Duke of Bedford, at Chenies, in Buckinghamshire (see *Builder* of October 6th, 1869),—of examples of plain old coloured glass, as at Kneale—there are English mansions to be added to the inventory which are famous for their great part irreparable, for instance, Cotleshe and Toddington. This latter noble residence, rebuilt, under the name of an Abbey, by Mr. Hansbury Tracey Leigh (before his elevation to the peerage), is rich in fine old stained glass, brought from Spanish convents, and should hold a place in future editions of the Art Inventory.

As to the stained glass of the Church, as to which so much was written in our pages the year before last, we safely add to be from "designs attributed to Albert Dürer, and also to Francesco Francia." Very brief notices are given of the superb windows to be found at Rouen, in the Cathedral, the Churches of St. Ouen, St. Godard, St. Maclou, St. Pierre, and St. Victor, in the Museum, and in the house of M. Bonavent. No collection of glass, either in France or in England, equals the chronological series, from the thirteenth to the seventeenth century, arranged in the Museum of Rouen.

Twenty-six large stained-glass windows, forming a complete history of Jesus Christ,

beginning from the birth of the Virgin Mary and dating from 1527 to 1681, now exist in King's College Chapel, Cambridge. Fragments alone of stained glass are to be found in the contemporary Chapel of King Henry VII., at Westminster. Of the third of these richly ornamented efforts of this period of English architecture, St. George's Chapel, Windsor, we find no mention in the inventory.

The large rose window in the north transept of Lincoln Cathedral is mentioned as the most important example of Early English stained glass now existing in the country. The date is stated to be about A.D. 1200. This window shows, in the central part, a representation of the blessed in heaven, with Christ sitting in the midst. Sixteen circles, each full of allegorical or doctrinal symbolism, form the outer part of the windows, and an angel tossing a thurible is figured in each of the four trifoliate at the angles. Much old glass, of very rich colouring, is to be seen in other windows of this cathedral. The easternmost yet contains a window, in the north transept, which was given by Edward IV. and his queen; as well as representations of the figure and of the miracles of A'Becket, dating from the twelfth and thirteenth centuries. The great windows of the nave and choir of York are filled with painted glass, by John Thornton, of Coventry, A.D. 1404 to 1409. Early Norman glass, of the twelfth century, is to be seen in the choir of the twelfth century. The clarity of the nave. Windows, of the times of Edward III., of Henry IV., Henry V., and Henry VI., are all extant in this noble minster; and the harmonious effect of the *grisaille* will not readily be forgotten by its visitors. In the chapter-house are seven lancet windows, exhibiting the arms of England, Scotland, of benefactors to the Church, foliage, geometrical forms, armorial badges, saints, prophets, kings, queens, and events of sacred history. The ruby and dark blue tints are especially rich.

The sprawling Crucifixion recently erected in the central east window of St. Paul's is extended from the "Art Inventory" by its recent date. The glass at Chartres does not go back to an earlier date than 1450, and much of it is fragmentary. The glass at Winchester is of the fourteenth and fifteenth century. The great east window of the choir of the cathedral of Gloucester dates in 1346, and is the finest stained glass of the Decorated period in the country, representing the twelve apostles, the saints, and Jewish kings, larger than life, and now well restored. The east window is filled with original glass of the fifteenth century, white and yellow being much employed. The ruby glass in the west window of Exeter Cathedral is "said to be some of the latest manufactured in England at the workshop of the art." Rochester, which contains a considerable quantity of stained glass, some of which at least is probably old, is not mentioned in the Inventory. Ripon is only spoken of as containing "windows of old stained glass." Bath Abbey, St. Alban's Abbey, St. David's Cathedral, and other religious edifices, which bear traces of very ancient or very elaborate windows, might be referred to with advantage, as, even if no traces are now to be found of the glass, the historic record of its existence or of its destruction is not less interesting than in the case of Fontevault. In fact, an orderly reference to all our cathedrals, minsters, abbies, and important and ancient parish churches, and the windows accompanied only with the note "no stained glass now existing" might advantageously form a feature in future editions of this part of the "Universal Inventory."

It would be desirable, also, that some reference should be made to the windows of the church of San Vitale, at Ravenna, which M. Lacoste states were filled with stained glass in the time of Justinian. The walls, vaults, and apse of this church, we are informed in the catalogue on mosaics, are covered with work of this description. "Of the time of Justinian, as fresh as the day they were placed there." Twelve obelisks in this whilom capital of the world are referred to as rich in mosaic, but they all are entirely destitute of stained glass.

We feel sure that no one will welcome the hints which have occurred to us on the perusal of this very interesting volume more heartily than the editor himself. The work forms a new claim on public gratitude. That Mr. Cole should have found leisure for its preparation, among all his toils, is in itself a matter for admiration. The attempt to construct such an inventory from the partial and fragmentary information which has hitherto been accessible, is one which

demanda something of the credit due to the leading of a *fortiori* hope. The future value and importance of the work will be very little affected by the more or less ample fulness of the first edition. The sketch of such a work is in itself no small boon to art. We venture to suggest the preparation of interleaved copies, to be sent to men who are well versed in the several subjects of the successive parts. Their return to South Kensington, with annotations and additions, will be a national benefit. As an instance that is not without an emulating point of view, let us suggest that the director of the South Kensington Museum might insert in his own private copy some description of the interesting specimens of ancient glass which are to be seen in that building, including some from the Sainte Chapelle, Paris, of the thirteenth century. No one can accuse the editor either of unacquaintance with the fact of their possession, or of egotism in giving undue prominence to this importance. We trust, moreover, that the plan actually followed in the South Kensington publication, of printing each period catalogue under a brief but laud *précis* of the state of our best information on the subject to which it relates, will not be permanently departed from in the "Universal Art Inventory." We congratulate all concerned on the appearance of the work, and we trust that its reception by the public will be such as to call for the speedy issue of a second and enlarged edition.

THE FRENCH MIND.

BUILDINGS are monuments of mind, and architecture is the truest index of a nation's genius. If English art is free, varied, and original, and whimsical, it is because the English character loves liberty above all things, even at the expense of wisdom and beauty. If French art, in its timid sameness, has the oneness of massive creation, it is for a psychological reason we here beg leave to explain.

The very France is the history of centralisation; we might almost say, the history of leading ideas. Politics, literature, science, and art have always in France revolved round centres. French military monarchies, the French Academy, and French schools of art, show how readily Frenchmen will sink their own individuality in behalf of a common centre, we repeat, are ever hurrying to centres which they prop up with conventional ornaments. Given an object of thought, and a French thinker there and then casts about for some dominant feature whereon to hang bright hints and ingenious speculations. If he be a dramatist, he will construct some passion, embody it in a representative character, and, by bringing it into contact with the climate, strike the spectator home with one restless impression. Corneille's "Polyeucte," Racine's "Athalie," Molière's "Tartuffe," are all alike in this quality of artistic structure; for each of those plays is the radiation of one idea. But the same characteristic belongs to lyrical and satirical poets, such as La Fontaine and Béranger, to sentimental poets such as Lamartine, and to all French historians, orators, pulpit preachers, and philosophers.

A poem like the *Iliad*, where every hero has his prowess-time, or *apoteosis*, is utterly abhorrent to French artistic conception; and the *Iliad* is not more to the French mind than his golden rays fly parallel into space, and converge not. Where is the centre-piece, where the centre-trend of those epics? objects the French critic. But the *Odyssey* and the *Æneid*, which are centralised in Ulysses and Æneas have been imitated by Fénelon and Voltaire. It is, indeed, very characteristic of the English and the French mind that Homer is the more popular poet in England, and Virgil in France.

The arts of music and painting are also treated by Frenchmen with a view to central effects. The most striking passages in the works of Auber, Gounod, Chopin, and others, are as much the results of a scientific focalising of melody as they are of artistic inspiration. Again, in painting, the historical school stands foremost in France, because its subjects allow of centre thoughts, *idées mères*, as they are called. If the subject be the bursting of a siege-gun in a *recluse*, all the figures thronging the canvass will have an attitude or be doing a work which bespeaks the accident. Every sentry by some act of terror, every stray implement of war by its partial destruction, will tell the tale of the explosion. The general tone of the colouring will be managed so as to set off the flash and

smoke of the bursting cannon. Variety in unity; such will be the French picture.

The French art of war, as understood by Napoleon, is the art of massing troops in one point. Napoleon's concentrating genius is French genius typified by a giant mind.

The Greek mind, which is Teutonic in its poetic exuberance and French in its method, gives us in the Laocoon group a fine sample of the qualities most valued by French sculptors. Laocoon, the central figure, at once arrests the attention of the spectator. Laocoon's sons, writhing in the knotty folds of the serpent, seem to suffer in order more boldly to bring out the anguish of their father. In conception and execution the Laocoon group is the paragon of sculptural centralisation.

Now, architecture, which might be defined as the art of arranging parts, is, of all arts, the most likely to be swayed by the French spirit of centralisation; so it occurs that a French building is, as a rule, the organic outgrowth of one idea. Every portion, every detail of the building, every part of the ground it stands on and the garden which surrounds it,—subserve that idea or purpose. If the building be meant for a stable, the body of the building will be so suggestive of a stable that even the most unpractised eye could scarcely fail to recognise the purpose of the erection. The top of the French building, and the main elements will all be in character with the main building.

Again, no Frenchman would ever think of designing a schoolhouse like a Gothic cathedral. Such an adaptation is to him illogical, because on the face of it the schoolhouse would be a contradiction.

French architects, however, though upholding the sanctity of *ensemble*, or unity of design, are fully alive to the organic individuality of details. Vary the parts, they say, but let not the parts be foreign to the whole. Let the architect imitate God the Creator. Let his buildings be like the human body, one in purpose, infinite in detail, and beautiful in detail.

But in order to build an edifice which will, so to say, be explained by its every part, the architect must breathe his conception into the minds of his men. Now, French workmen, true to their national genius, quickly kindle under their master's inspiration, and work up to it. Again, the public, the French public, and the artist effort, will only do so with the sanction of artistic laws. So, in France, masters, men, and public are at one in carrying out with imposing unity the leading ideas of great plans.

In conclusion, English students of French architecture should approach French buildings with a conviction that the architect who has designed them can yield not only an æsthetic but a generic reason for their every part; in other words, that he can defend every detail of his plans on the score not only of individual beauty, but also on that of appropriate beauty, or *beauté raisonnée*. A French architect may err with respect to the end, but seldom fails in the means. There is judgment even in his mistakes, for his mind is a repository of classified ideas. Whoever wishes to do justice to French architectural thought must consider its errors not as the shortcomings of ignorance, but as sophisms, the aphorisms of scientific though inaccurate deduction.

LAWRENCE HARVEY.

École des Beaux Arts.

THE FOREIGN GALLERY, PALL-MALL.

THE collection of pictures by French and Flemish artists now exhibiting in the Gallery, 120, Pall-mall, though small (219 pictures) is of great interest, and contains a number of pictures of remarkable excellence and beauty. One of the most striking is M. L. Perrault's "The Orphans,"—a work of art full of poetry and pathos, and finished with the most minute care. It shows a group of girls, three in number; the eldest is attired in deep mourning, and surveys the sisters with looks of extreme sorrow, while in her arm she carries a chubby-faced infant. Upon her shoulder rests the head of her younger sister, and the face, directed upwards, seems searching in hers for some gleam of comfort, while the right arm, thrown carelessly over the shoulder of the third, binds them together in a united family circle. The grief of each, differing in degree until it is lost in the happy repose of the sleeping infant, is admirably told, while the whole effect of the picture is such that it recalls one to again and

again gaze upon it. There are two small works by Messieurs, one called "Qui va là?" the other a "Halbardier on Guard"—all life. "A Quiet Spot in the Forest of Fontainebleau," by Rons Bonheur, displays the haught of the stag beneath a canopy of foliage, where the earth is a carpet of moss and herbage, and the sunlight steals in, subdued by the intricate screen which nature has wrought with the green leaves.

The picture is more truthful than effluence. "The Bargamont's Daughter," by M. C. Bischoff, is a finished study. The light which breaks upon the head of the figure has a marvellous effect. "The Normandy Flower Girl," by M. J. Portaels, is also an admirable picture. "The Remedy," by L. Israels, tells its own story. The wife is stricken with disease; the husband, a French labourer, sits by the bedside, with his daughter between his knees, gazing with earnestness upon the wan face of the patient to ascertain if the drug which the nurse has but just administered can have already worked a cure; while in the foreground a child, unconscious of the sorrow which befalls the apartment, is sporting with the fishing-tackle that the father has thrown idly by. Of rare beauty is Moris's head of "Veronica." As a piece of manipulation it is not remarkable, but the expression is divine.

There are two small works by Edouard Frère, "Helping Himself," and "The Family Scrap-book." A group of little girls form a circle round the family treasure, and the artist has expressed of the delight which the picture-book affords. The mother gazing fondly on her infant, by Jordan, will be understood and appreciated wherever womanly graces and the innocence of children are welcome.

Picture by Alma Tadema, Henriette Browne, J. Goussier, G. de Jonghe ("Playing from Memory"), Louis Galland, B. de Verger ("The Drowned"), also demand notice; and even now we have omitted mention of two of the most complete works in the gallery, "Nonchalance" and "La Vieille," both by Alfred Stevens.

Some water-colour drawings on the first-floor, serve to show what foreign artists are doing in that walk of art.

OWEN'S COLLEGE, MANCHESTER.

THE design for the first portion of the new buildings for Owen's College is now complete, and the works themselves will shortly commence.

The site is about a mile to the south of the centre of Manchester, on the west side of Oxford-road. It is bounded on the north by Copland-street, and on the south by Burlington-street. At its east or Oxford-road end, it is some 120 yards in width.

The original idea was to make the buildings surround a large quadrangle; but this idea has been modified, it being found that the cost of the work would exceed the means at the disposal of the committee; and it was considered by them that the present requirements of the College would be more conveniently met by the erection of a compact range of buildings, with space behind for less lightly, but not less necessary, structures, and in front for others of a more ornamental character, which will, doubtless, soon be required.

The design about to be carried out, and which we have now to describe, has been brought to maturity after long and careful consideration on the part of the committee and professional advisers, the architect, Mr. Alfred Waterhouse. The scheme consists of a main block of varying width, and upwards of 300 ft. in length, set back about 200 ft. from Oxford-road, and running parallel with it. It is intended that this should ultimately form the western side of a quadrangle or court, 300 ft. in length, by 100 ft. in width. The three other sides will not be enclosed at present; but when the entire scheme is carried out, there will be a natural history museum on the south; a library, examination-hall, and other departments on the east (Oxford-road front), where the chief architectural features would be introduced; while to the north there would be space for additional lecture and class-rooms, and for the medical school.

At the rear of the main block is a large space of irregular shape, averaging 200 ft. in width, on the south of which (Burlington-street side) the chemical laboratories will also be at once erected in a detached building, hereafter described, while on the north ample space will be left for an extension of the laboratories, if needed, for

various subsidiary building, and for a gymnasium.

The main block, containing as it does the various lecture-rooms, class-rooms, &c., has been planned so as to secure the maximum of the three essentials,—light, quiet, and airiness. Wherever possible the class-rooms turn their back upon Oxford-road, which is always busy and noisy, while a wide corridor of communication runs along the building on that side. On the upper floor it is cut in twain in the middle of the library, on the first floor, and by a large arts' class-room on the ground-floor.

This division of the corridors has been devised, amongst other reasons, to prevent their being used too freely for general traffic. Each half is approached by a separate staircase entered from the east side. On special occasions, however, or whenever required, the whole of each floor can be thrown *en suite*.

In arranging the accommodation, one important consideration has been kept constantly in view. Inasmuch as the requirements of the college may vary, one department needing an increase of space, another requiring less,—the rooms have been so arranged as to be put to different uses, if need be, without any structural alteration whatever being involved. As the full development of the scheme is reserved for the future, some ingenuity has had to be exercised to make temporary provision for wants which will be more adequately met when the chemical laboratories contemplated are actually been erected. Thus, one large arts' class-room, not required as such at present, will be used as a temporary library; another large room in the basement will form a temporary dining-hall.

The slope of the ground has favoured the arrangement of the basement story as planned. The floor of the east side is about the level of the ground; on the eastern side the rooms will look into areas 26 ft. wide, so that the story is practically entirely above ground. On this floor will be placed the engineering workshops and museums, the students' temporary dining-room and common room, the natural philosophy workshop, rooms for students' boxes, lavatories, cloak-rooms, &c.

The southern extremity of the building is devoted, on the basement and ground floors, to the ornamental theatre,—a room 66 ft. by 40 ft. The professor's table is at the western end, on the level of the basement floor. The floor of the theatre rises eastwards, until it reaches the level of the ground. The room is well lighted by windows on the south and west sides, all lifted (as well as those of the natural philosophy lecture-room) with iron shutters, to admit of the rooms being darkened at pleasure.

The other principal rooms on the ground-floor will be the engineering drawing-room and lecture-room, natural philosophy rooms, a large arts' class-room, with rising floors; the board-room, and secretary's office.

On the first-floor there are three large arts' class-rooms, professors' rooms (which, for the most part, are common rooms), the temporary natural history museum, temporary library, students' reading-room, and various small arts' class-rooms.

There is considerable accommodation in the roof, for which special uses will, no doubt, soon be found.

The chemical laboratories, in the separate building already mentioned, will form a block 95 ft. square. There are two large laboratories, each of which is 40 ft. wide, by 30 ft. and 22 ft. in height. There are store-rooms below, and various subsidiary rooms adjoining the laboratories.

The professor's private laboratory is so placed as to command both the others, and there will be direct communication, by a covered corridor, between this laboratory and the table in the lecture theatre.

The dimensions of a few of the other rooms, and of the floors, may be interesting. The stories will be, except in special parts, of the following heights from floor to ceiling:—Basement, 15 ft.; ground-floor, 17 ft.; first-floor, 17 ft. 6 in.; rooms in the roof, 10 ft. The chief part of the chemical theatre, which averages 28 ft. in height, and some of the large arts' class-rooms, which have been made about 22 ft. high, by a little scheming in the arrangement of the floors.

The four large arts' class-rooms are of the following dimensions:—One of them 40 ft. by 45 ft.; two 40 ft. by 33 ft.; and one 31 ft. by 35 ft.; that devoted temporarily to the library

is 40 ft. by 45 ft. The students' reading-room is 84 ft. by 33 ft.; the engineering drawing-room, 52 ft. by 31 ft.; the board-room, 37 ft. by 30 ft.

There are in the buildings first to be erected 90 rooms in all, of which the chemical department takes 28; the natural philosophy, 9; arts' class-rooms, 9; engineering, 8.

Special care has been bestowed in maturing the scheme for warming and ventilating the buildings. In the sub-basement there will be hot-water tanks, and a steam coil, the latter to drive a fan for forcing fresh air (warmed in winter) into the corridor and lecture theatre. In the ordinary class-rooms there will be openings for ventilation above the doors, and all the windows will be double hung as sashes with a light above, hung on pivots, for summer ventilation, to open diagonally, so as to throw the fresh air upwards towards the ceiling.

The whole of the rooms will be warmed by hot-water pipes, but provision is made for the introduction of fire-pieces hereafter, if found desirable. Fresh air is also brought into the rooms behind the coils of hot-water pipes wherever practicable.

A special fan, for the extraction of vitiated air will be taken from the ceiling of each room into large shafts in the roofs leading to ventilating turrets, in which steam cones will accelerate the draught.

Separate and particular arrangements have been made for warming and ventilating the chemical laboratories. The tanks will be set up above the roof, with large arched openings on each side, behind which a cowl will work, always presenting its mouth to the wind. This tower will bring a constant and ample supply of fresh air to the warming apparatus in the basement of the laboratory building. The smoke from this apparatus will be still further increased the draught in the flues for the extraction of vitiated air. The warming of the laboratories will be effected like that of the other parts of the building, but from their own separate apparatus.

The style of the buildings, as might be presumed, is Gothic, of a new classic and early type. The walls will be faced throughout with ashlar stone, and the roofs covered with slate. The upper part of the central gable will be devoted to a clock-dial, and over the centre roof will rise a lofty spire to be used for purposes of ventilation. A similar feature, but lower, will rise over the chemical lecture theatre. Square-headed windows are the rule, except in the corridors and staircases, where they are pointed.

Internally, the most interesting architectural features will doubtless be the staircases, which are arranged in large octagonal ways, 33 ft. by 14 ft., and cut off from the corridors by arcades of double columns.

The floors of the buildings throughout will be fireproof on the Dennet-arch principle.

OVERSIGHT IN THE TOWER SUBWAY.

IF the Tower subway is to be the prototype, as we are told, of a new class of thoroughfares, it may be hoped it will, nevertheless, be the only one with either shafts, lifts, or a change of vehicle, in so short a journey. To explain the exceedingly small necessity for any of these, let us first add to the quarter-mile of the present subway proper, the two shafts of 50 ft., and we find there are 1,430 ft. of clay, all iron-bound, 1 foot thick, to be drilled through at an expense. Now, suppose that same 1,430 ft. in one uniform tube, making an eighth of a circle, all castings from end to end on one model, the radius of curvature being everywhere 1,808 ft. The chord of this octant, or distance between entry and exit, would be about 1,261 ft., carrying each, say 12 yards, further, or nearly 15 ft. than at present. If the river's width be 1,300 ft., the descent under each bank, till getting under water, would be some 36 ft. and the whole descent, to the middle, 139 ft., which would keep all well free from the bed materials, and down in the ecene London clay, and more so the greater the water pressure. Yet the single unchanged shaft would be a very small, a short level terminus above ground; and all inconvenience from the tilting to an inclination of 22½° at starting and arrival, would be obviated by making it in three or four separate bodies, each seating four, and hung on trunnions, so as to keep vertical. The utmost utilisation of gravity as motive power would also be made, by simply letting it acquire all the speed and run as far as

i would, which ought, with good wheels and rails, to be full seven eighths of the journey, when it would be caught by a clip, and pulled the remaining eighth by steam-power.

It is well known that without friction or resistance, the quickest way, or "frictionless way," from any spot to any other, would be part of a cycloid. If the second point be lower than the first, or a whole cycloid if on the same level. Now, if you only out from a cycloid one-eighth at each extremity, the remaining three-fourths contain practically no change of curvature, but so closely approach a quadrant of a circle, that the fittest workman could hardly distinguish them. But the brachistochrone allowing for friction, is always less curved than the cycloid, and still more approximate therefore to a smaller circular arc than this was to a quadrant. Thus it is seen how very near an octant must be the theoretically very best subway for economy of power.

R. L. G.

THE TRADES MOVEMENT.

London.—Another meeting of the delegates from the carpenters' and joiners' societies in furtherance of the nine-hours movement has been held at the Duke of York Tavern, Lambeth; Mr. Sinclair in the chair. The delegates gave in their reports, showing the rapid progress of the movement. District meetings had been held at Bricklayers, and Finsbury, Finsbury, Finsbury, and King's cross, and the new code of working rules had been well received at each meeting. After the transaction of provincial business, and appointing deputations to attend district meetings, the proceedings concluded. The aggregate meeting will be held about the end of the month.

Barnsey.—The six months' notice, which was given by four of the master joiners in Barnsey to their men, to work one hour longer per day during the summer months, has expired, and a number of men have left their work. The masters who gave the notice were Mr. John Goodyear, Mr. John Carr, Mr. George England, and Mr. Thos. Jacques. The men up to the 31st of March commenced work at seven o'clock in the morning, and the masters are wishful that they should commence work every morning (except Monday) at six o'clock from the 1st of April to the 30th of September, and at seven o'clock every morning in the winter half of the year, leaving work at four o'clock on Saturdays. Some of the men refused to accept the change, and left work, but others still remain; and, seeing that the trade is anything but active, it is not expected that the dispute will continue long.

Edinburgh.—A correspondence as to the employment of unskilled labour in the painting trade has taken place between the operative painters and their masters. It was commenced by the workmen presenting a petition to the masters, asking them to put a stop to the system of employing unskilled labourers—a system which, in the opinion of the workmen, was the cause of much annoyance both to them and their masters, and was also a source of injustice to the public. It was well known, the memorialists said, that many of the labourers referred to were in the habit of passing themselves off as journeymen, and this they felt did much injury to those who had served a full term of apprenticeship to the trade. To this the masters, through the secretary of their society, answered that they were quite able to manage their own affairs, and that the workmen had no right to interfere with their mode of conducting their businesses. They at the same time took the opportunity of denying that labourers were employed to do skilled work. The workmen, they thought, had themselves very much to blame for the state of matters, and they thought they had refused to do certain kinds of work which they considered only suitable for labourers. The secretary of the operative painters, in replying to this communication, said that the workmen had not alleged that skilled labour was done by labourers. What they had said was that labourers were put to do work which painters should do, and which they did not object to do. They denied that they had any wish to interfere with the manner in which the masters conducted their businesses. As yet the masters have made no further communication on the subject.

Glasgow.—A conference meeting of the Glasgow master joiners and operatives has been held in the Religious Institution Rooms. Mr. Walter Bannerman on behalf of the former, and Mr. John Bennett on behalf of the latter,

were appointed co-chairmen. A printed copy of the proposed working bye-laws, made out by the operatives, was handed to each employer present. After a friendly conversation, the employers intimated that they were empowered to propose that the whole matter in dispute should be submitted to an arbitrator appointed by Mr. Henry Glassford Bell, Sheriff of Lanarkshire, and that his decision should be final and binding on both parties. The operatives, on their part, stated that they had no power to refer the matter to arbitration. Mr. Bennett said that it had been spoken of among the operatives to reduce the working hours during December and January to eight hours per day, and five hours on Saturday. Each party agreed to submit the result of the conference to their respective bodies, with a view of arriving at an amicable settlement. A meeting of the joiners was held next day. After a long discussion, two resolutions were adopted, the first being:—

"That we consider the offer of arbitration made by our employers unnecessary, so far as our working hours are concerned, our time being our capital, and consequently our private property. No arbitrator has power to decide against the expressed wish of a man how many hours he will work. Should our employers find it impossible to arrive at an amicable settlement with regard to wages or other matters connected with the present dispute, we are quite willing to accept arbitration in the way they have indicated."

Stirling.—A meeting of master builders has been held in Stirling for the purpose of considering a demand by the operative masons to have an advance made upon their wages of 1d. per hour from the 1st of April. All the master builders in the town were present. The circumstances of the trade were fully considered, and, after a discussion, it was unanimously resolved to refuse the demand.

Perth.—A meeting of the master masons has been held at which it was unanimously resolved not to comply with the demands of the men, numbers of whom are daily leaving the town for other places in search of work. The men assert that the rise of wages sought, from 5s. 10d. to 6d. per hour, would only place them on an equal footing with the workmen of other towns. No agreement has yet been made between the masters and journeymen masons with respect to the rate of wages. The masons employed on the Scottish Central section of the Caledonian Railway have resumed work, the railway authorities having raised the wages to 6d. per hour.

Perth.—Some months ago the operative masons in Arbroath resolved to break the nine-hour system on the 1st of March last. Several did so, but as a number of employers declined to act on the new plan, it has been found necessary to return to the ten-hour system. At a meeting held the other evening, the operatives resolved to do this, but at the same time stated that they would renew their claim to have the working-day reduced to nine hours at the first opportunity.

ST. PANCRA'S STATION AND ROOF.

In the course of a paper on this subject, read at the Institution of Civil Engineers, by Mr. W. H. Barlow, Mr. Charles B. Vignoles, President, in the chair, the writer said:—

In arranging for the strength of the roof, as it was required that the arch should be capable of maintaining its own weight, without any intermediate connexions with the tie, it was considered expedient to adopt a low rate of pressure upon the metal, with a large assumed weight acting in addition to the weight of the principal. This was done, as the arch was designed so as to be capable of bearing an assumed load of 70 lb. per square foot measured on plan, in addition to the weight of the principals, with a stress on the metal not exceeding 3½ tons per square inch; or, what amounted to about the same thing, a load of 68 lb. per square foot, with a stress of 3 tons per square inch. The assumed weight of 70 lb. per square foot on the surface occupied by the arched portions of the rib, viz., 7,040 square feet, amounted to 220 tons; and, adding to this the weight of the open part of each arch between the springings, or 35 tons, the total load became 255 tons.

The Hub of pressure formed an angle of 55° with the horizontal at the springing, and therefore the pressures were 155 tons at the springing and 80 tons at the crown. The sectional area of the upper flange of the rib was 23 square inches, and that of the lower flange of the rib also 23 square inches, so that the stress on the metal with the assumed weight of 70 lb. per square foot was 337 tons per square inch at the springing, and 194 tons per square inch at the crown.

The cost of the roof, as it stood in the finally settled accounts, excluding the screens, was £3,483l. The north screen and gable had cost 7,375s., while a second screen and gable for the southern end, so as to separate the passenger station from the hotel buildings, had cost £5,667s. As the area within the walls measured on plan was 169,400 square feet, it followed that the cost per square of 100 ft. was, for the roof, excluding the screens, 31l. 11s.; for the north screen, 4s. 7d.; and for the extra rib and north screen, 5s.

The brickwork of the substructure of the station, and the whole of the works of the upper and lower lines of railway for a distance of three-quarters of a mile northwards, were let to the Messrs. Waring, and had been carried out under the superintendence of the author's principal assistant, Mr. Campbell; while the ironwork of the bridge and of the lower floor of the station was in charge of his assistant, Mr. Grier. For the details of the roof the author was in a great degree indebted to Mr. Ordish. The Butterley Company were the contractors for the roofing and for the lower floor. Mr. (now Sir) G. J. N. Allport being their manager, and Mr. Clark their foreman on the works.

THE DRAWINGS OF THE HOUSES OF PARLIAMENT.

At a special meeting of the council of the Royal Institute of British Architects, held on Monday, the 14th March, 1870, it was resolved,—

"That it having been referred to this council to advise a member whether he is bound to comply with a requisition to give all the architectural plans of his buildings, to which he had acted as architect, and all other papers necessary for affording a complete knowledge of the building, and of the works carried on in connexion therewith; the council express their most decided opinion that the rule and custom of the profession is, that all the drawings and papers of an architect, prepared for the purpose of erecting a building, are, and remain, the sole property of the architect."

In the House of Commons a few nights ago, Mr. Tipping asked the First Commissioner of Works if it was true, as stated in the Builder, that the plans and drawings of the architect of the drawings of the House of Parliament; and if he was aware that the Royal Institute of British Architects had declared that such a demand was not in accordance with professional custom, according to which such drawings are the property of the architect? Mr. Ayrton is reported to have said it was true that he had asked Mr. Barry to deposit in the Office of the Board of Works certain plans prepared by him for her Majesty's service and paid for by the public. It was also correct—at least he had been so informed—that certain architects had resolved that they would resist to keep plans which they had prepared for other people who had paid for them. He had referred all the papers to the usual advisers of the Board, in order to ascertain what the rights of the Crown were.

Mr. E. M. Barry has since written:—

"I have just seen that the First Commissioner of Works stated, in a hurried reply, in answer to a question, that he had asked Mr. E. M. Barry to deposit in the Office of Works certain plans which were prepared by him for her Majesty's service and paid for by the public. I regret that he had placed the matter in the hands of his legal advisers."

As I have offered to comply with Mr. Ayrton's request, unusual though it be, to give him my drawings which I have prepared for the Government during an engagement which has now lasted ten years, I imagine some remarks have occurred in reporting the above answer. It describes inaccurately the position of the matter, and makes up the matter to the extent of which (and the possible circumstances under which it has been preferred) will be apparent from the papers which are before me and which on the subject have been laid before Parliament."

Sir,—The following is from the Echo of Saturday last:—

"We are heartily with Mr. Ayrton in his conflict with Mr. Barry. The system of placing under the professional employment of non-official persons has been enormous. The Land Revenue, the Ecclesiastical Commissioners, the Admiralty, the War Office, the Post Office, the various departments of the Government, are full of disinterested persons on this point. Mr. Ayrton has most properly placed the charge of the Houses of Parliament under the care of the professional officers of the Board of Works, and Mr. Barry, who seems to consider himself as sort of honorary assistant of the new Palace of Westminster, is not to be allowed to interfere. But the fight between Mr. Ayrton and Mr. Barry is, as we understand it, over the working drawings of the building. Mr. Barry says, by the custom of the profession, the drawings are his, and he is entitled to them. We say, the sooner Mr. Ayrton, with the professional officers, explains the position of the matter, and if it is proved that the nation has paid for the work, and

been removed. It was under the control, not of the Board of Works, but of the office of Woods and Forests, and it was within their competence to approve designs of buildings, including the projecting bay window to which the noble lord alluded.—Lord Redensale wished to know whether there was any design for the utilisation of the ground in Charles-street.—The Duke of Argyll said part of this site belonged to the Indian Government, which contemplated the erection of a museum there. The present museum building was very inconvenient, and it was increasingly important for the exhibition of the commercial products of India to erect a better one. In the present state of Indian finances, however, no money could be spared for this purpose.

The Wellington Monument.—Earl Cadogan moved for copies of any correspondence which might have recently passed, but the Secretary, Chief Commissioner of Works and the surveyor of St. Paul's Cathedral, with reference to the monument to the late Duke of Wellington, in course of erection in that church; a return of copy of agreement entered into between the Board of Works and Mr. Stevens, the artist selected to execute the work; payments made to Mr. Stevens on account of the work itself, or to others for purposes in connection with it; dates of payment; sum originally voted by Parliament for the erection of the monument; and balance remaining available for the completion of it.—The Marquis of Lansdowne said the Government would not object to the return if the noble lord presented it, but he being expected that the work would be completed within a year, and it being probable that the original terms would not be adhered to, it would be better to await its completion before entering as an inquiry into the mode in which it had been carried out. The motion, however, was ultimately agreed to.

The New Refreshment Rooms.—The House of Commons committee met on Wednesday and adopted the Board of Works' plan for the alteration of the rooms adjoining the library (in opposition to that proposed by Mr. Barry), so as to fit them for dining and refreshment rooms for both Houses. The works will be proceeded with in August. Mr. Barry applied to be heard in evidence by the committee, but his offer was declined, on the ground that the committee had to judge of plans, not to hear witnesses.

THE ARTS AND THE INTERNATIONAL EXHIBITION OF 1871.

PRINCE CHRISTIAN presided at a conference of artists, sculptors, decorators, and others interested in the fine arts, held on Wednesday, at the Society of Arts, to consider the representation of the fine arts in the forthcoming series of annual International Exhibitions.

His Royal Highness, in opening the proceedings, said:—The special object of these fine arts exhibitions is to show how closely high artistic culture can be connected with works of industry. In modern times we have lost sight of this intimate alliance between art and industry, which was characteristic of Medieval and ancient days; and what we are now aiming at is a revival of this wholesome alliance. We hope that these exhibitions will encourage the education of artistic talent in the direction of objects of utility of every description. Many instances may be quoted from history to show that it was not beneath the dignity of the most illustrious professors to combine the useful with the ornamental. Michelangelo was a sculptor, painter, and architect; so was Raphael. Leonardo da Vinci was an engraver, an architect, and painter; Francia was a goldsmith, engraver, and painter; Cellini was a goldsmith and sculptor; Holbein an architect, painter, and designer; Albert Dürer a painter and engraver. Surely these great examples must stimulate people to the culture of arts in connection with industry.

Col. Scott explained very fully the details of the arrangements contemplated; and a discussion ensued, in which Mr. Redgrave, R.A., Mr. Millais, R.A., Mr. Henry Cole, Mr. Fahey, Mr. Stevens, Professor Huxley Lewis, Mr. Godwin, Mr. Hyde Clarke, and others, took part. On the motion of Professor Westmacott, R.A., seconded by Mr. Carter Hall, it was resolved—

"That this meeting, after having had explained to it the object of the intended international exhibitions, so far as relates to the section of fine arts, desires cordially to co-operate in carrying into effect the plans proposed."

The Lord Chancellor made an interesting

address in moving a vote of thanks to the chairman, which was carried unanimously.

We understand that Col. Scott has received a letter from Brussels, in which it is stated that a commission has been formed in Belgium, under the presidency of the Count of Flanders, for the purpose of organising a display of specimens of Belgian handicraft, to be included in the forthcoming International Exhibition to be held in London.

PROPOSED CATHEDRAL, BRITISH COLUMBIA.

STEPS are now being taken for the rebuilding of the cathedral at Victoria, the capital of British Columbia, which cathedral was recently destroyed by fire. The Bishop of Columbia, who is on a visit to England, is endeavouring to raise sufficient funds, in addition to what has already been obtained, in order to commence the cathedral at an early date. The Rev. Percival Ward, rector of Compton Valence, Dorset, a relative of the Bishop of Columbia, has promised to make a donation of the drawings of the proposed cathedral, which are now in course of preparation, by Mr. Ferrey, F.S.A. In plan the edifice, in its entirety, will consist of a nave 96 ft. by 28 ft., with span-roofed aisles, 25 ft. wide; choir, 42 ft. by 26 ft., having twelve stalls. The sacristy, 24 ft. by 16 ft., and the organ-chamber, will be on the north side, and the seats for the vicar of the colony in an aisle on the south side of the choir.

Owing to the prevalence of heavy western gales there will be no doors to the west, but the principal entrance will be by a large south porch. The tower, which is intended to be of lofty proportions, will stand at the south-west angle of the nave. When complete the cathedral is intended to afford accommodation to about 1,200 persons. The style adopted will be transitional between Early English and Decorated, sufficiently modified to suit the requirements of the climate.

PROFESSOR SCOTT ON VAULTING, AT THE ROYAL ACADEMY.

LECTURE III.—concluded.*

I HAVE hitherto dwelt wholly upon vaulting which has none but what I have termed functional ribs;—that is to say, such as have a specific utility; as transverse ribs to mark the boundaries of the bays, and to strengthen the vault in its main span; diagonal ribs to fortify the angles of intersection; and wall-ribs to support the vaulting surfaces at their junction with the walls; and occasionally ridge ribs, though these more properly belong to the succeeding stage. The next stage in the history of vaulting is that in which other than merely functional ribs are made use of,—intermediate ribs, in fact, to subdivide the spaces between those used during the previous period.

In square vaulting, one such additional rib is usually introduced in each space. In very oblong vaults two, and even three, were often introduced in the side spaces, though only one in the middle spaces. It is clear that this addition necessitates the use of ridge ribs, as, without them, the point at which the intermediate ribs meet at their apex would want abutment. So reasonable, indeed, was this motive, that we often find the ridge rib to have been omitted between the intermediate and wall ribs, because there its use ceased.

One thing which followed the use of these additional ribs was the curious serrated plan of the filling in. The oblique position of these ribs would, if the plan of the filling is remained unaltered, leave the fill or gravel of the rib nearly to vanish on one side, and to become very wide on the other. This led them to change the plan.

On looking at the top surface of vaulting where the ribs are visible, it is at once seen that this was also necessitated by a structural cause, as without it the filling in would not rest well upon the ribs.

No better specimen of this form of vaulting can be referred to than that of the Presbytery at Ely, built about 1240 to 1250, and the four bays immediately to the west of the crossing in Westminster Abbey, erected by Edward I. about 1280 to 1300. The latter is the more perfect, as having level ridges. The former, curious enough, having ridges to the side only which rise from the intersection towards the walls. I may mention that it is very common for vaulting with intermediate ribs to have ridges rising rapidly towards the central boss.

The use of these additional ribs became, from the latter part of the thirteenth century, rather the rule than the exception.

I may mention early specimens of it at Chester, both in the Chapter-house and in the Lady Chapel, the latter with raised ribs; but in each the addition being only in the side spaces. The Chapter-house at Wells has the intermediate ribs added throughout to those of the more normal examples at Westminster and Salisbury giving its vaulting a peculiarly full and rich, though rather crowded, effect. Bosses are usually introduced at all points of meeting, adding greatly to the richness of the whole.

Though I have called these ribs non-functional such is the case only in a limited sense, for, though not necessary, they nevertheless do their work; they divide and strengthen the vaulting spaces, and tend to do away with the necessity of such ribs as would be required to exceed the great thickness of filling in. They form, in fact, a stone framework or centre, with frequent supports on which the vaulting permanently rests. Nearly the whole of Exeter Cathedral is groined in this manner, and excellent specimens, though of rather late date, may be seen in the Chapter-house and in the choir of Exeter, of Westminster Abbey, and in the two towers through which the cloister is approached. These have the advantage of close proximity to the eye, which enables one to study them with facility.

The next step in the history of vaulting may be said to be wholly decorative in its motive. It is the addition of short cross ribs between the main ribs, and the introduction of various terms, such as stars, &c., round the central bosses, adding much to the complexity and ornamental character of the vault, and making a further increase to the number of the bosses.

Wonderful skill is often evinced in the arrangement of these patterns, which, traversing the chancel, transept, or singing-gallery, produce in the perspective an extraordinary diversity of effect. These ribs have received from Professor Willis the name of "Liernee," a term given by Philibert de l'Orme to the ridge-ribs (perhaps in common with these), but, as we are short of an English name for these cross-ribs, it comes in conveniently to our aid. The term seems, I believe, in origin, a short joint or rail, serving as a tie to steady other timber, which is very appropriate to its use (real or apparent) in vaulting.

We have a few excellent specimens of this class of vaulting in London; more particularly that of the St. Stephen's Crypt, and of a few of the cloisters appertaining to the same house, both erected in the first half of the fourteenth century.

In the former both the intermediate ribs and the Lierne are very subservient in size to the main ribs; which gives an excellent effect: indeed, I know of no work more skilful in the delicate disposition of the ribs in vaulting.

The vaulting of three bays of the eastern limb of Ely Cathedral, built by Alan de Walsingham at about the same period, is also of excellent design, as is that of the chancel of Nantwich Church, in Cheshire.

I am imitating the last-named to a certain extent in timber in the vaulting of a nave at Chester Cathedral, where, should the springs exist, the vaulting has never been completed.

Lierne are not placed at right angles to the surface of the vaulting, but in a vertical plane; perhaps from the facility it affords for setting them out on the ground plan.

We find the same cause regulating the disposition of the ribs adopted in setting out the stones forming the bosses, which had also to contain a short piece of the impinging ribs. Professor Willis, in his admirable papers on vaulting, gives in minute detail the method adopted, showing that, to facilitate the operation, they made the upper surface of the bosses horizontal, to serve as a sort of drawing-board for the plan of the intersecting ribs. I have tested this in several instances. In the western part of the nave at Westminster, there being no outer thickness of stone vaulting, the boss-stones appear, and their surface are horizontal. On sweeping away the accretions of dust and rubbish which the bosses have formed, and enough, the true plan and side lines of all the ribs are strikingly drawn upon them.

In the Lierne vaulting at Ely, though there has been an outer thickness of stonework, it was cleared away in the last century for the sake of lightness, so that the boss-stones, once concealed, are now visible. On clearing the ribs from obstructions, I again found, as at Westminster, the

* See p. 145, ante.

Had the architect stopped here, no system of vaulting, on the fan principle, or space so divided, could be more systematic or more simple in its ideal.

He had no thought, however, of stopping at so common-place a stage, and his pillars were designed only to do their work on paper and then to be erased. The columns were omitted, and their places supplied by pendants; but, as such a roof could not stand for a moment, something must be done to supply the support which the pillars would have afforded.

This was effected by the introduction of strong transverse arches crossing the whole chapel, and springing much lower than the vaulting. These crossed the narrower spans, striking arbitrarily into their fans, and uniting themselves with the central vaulting.

In the Divinity schools these great arches show themselves throughout, as the supports of the otherwise helpless vault; but in Henry VII's chapel they are visible only in the side vaults, which are strutted up from them with strong tracery; but their upper portions penetrate the central vault, and become concealed from view.

The same system is carried into the apse, and that with the most surprising skill. The apse is supposed to be a portion of an entire octagon, with an aisle supported by eight small columns, of which two are lost by its conjunction with the straight part of the chapel. These columns being converted into pendants, the structural arches supply, as before described, the support demanded; but in this case they converge to the central part of the octagon.

The treatment of this point in detail cannot intelligibly be described in words. It is, perhaps, the most consummately skilled piece of designing to be found in the whole range of Medieval vaulting.

I have now completed my running, and all too rapid, sketch of the arched and vaulted systems of Medieval architecture, though purposely leaving to another occasion the subject of domes. The limits of three lectures have only sufficed to give a somewhat cursory glance at its salient points, leaving the treasures of its detail to be searched out by the zealous student.

No subject in the whole history of architecture is so remarkable, or would more richly repay the investigator. I commend it to your individual study, and will only add that our own country is more rich in the variety of its vaulting than any other, and that London is especially well supplied with objects of study, containing, as it does, excellent examples of nearly every variety of vaulting, from the stern severity of the work of King Edward the Confessor in the substructures of his monastic buildings at Westminster, to that gorgeous and astonishing work which I have just been describing, and of which we may boldly assert (whatever may be our individual preferences), that the world does not contain its equal.

BELFAST TOWN-HALL AND MUNICIPAL BUILDINGS.

The works for the new municipal buildings in Belfast, Ireland, are being energetically carried forward; the courts will probably be finished in May, and the whole completed in little more than a year from the present time.

The plan comprises, besides council-chamber and corporation offices, a recorder's court, custody and summons courts for magistrates, and the necessary offices in connexion with them; prisoners' cells and charge-office; police-barrack for sixty-four men, with stables, district stores, &c.; fire-brigade station for six engines, with superintendent's house and stables.

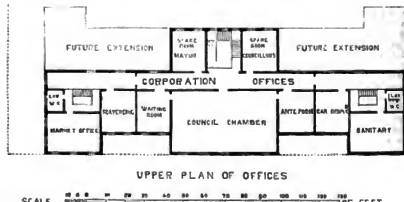
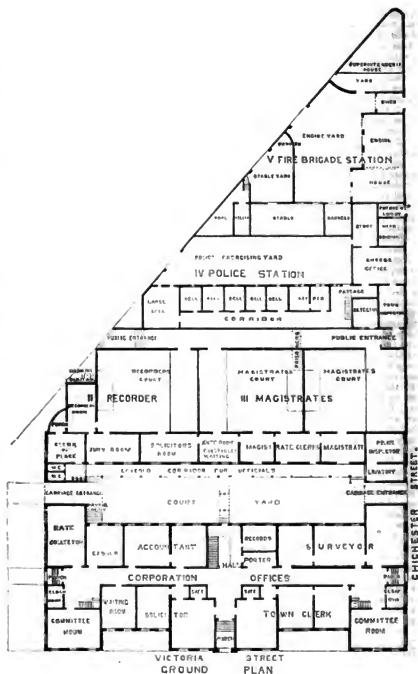
The material is perforated brick, from Ravenhill; and the freestone dressings are of red stone, from Dromfries.

The site is adjacent to the proposed Central Railway Station, and at the junction of Victoria-street and Chichester-street, from which point the view is taken.

The design is that selected in the competition of January, 1869, but our view shows the additional building required subsequently to the contract plans to form the central police-barrack of the district, and a tower for the fire alarm-bell.

The contract was taken at 16,000*l.*, by Mr. James Henry. This was the sum stipulated in the instructions to competing architects, but the additional building will most likely increase the total outlay to 20,000*l.*

The architect is Mr. Anthony Thomas Jackson, of Belfast.



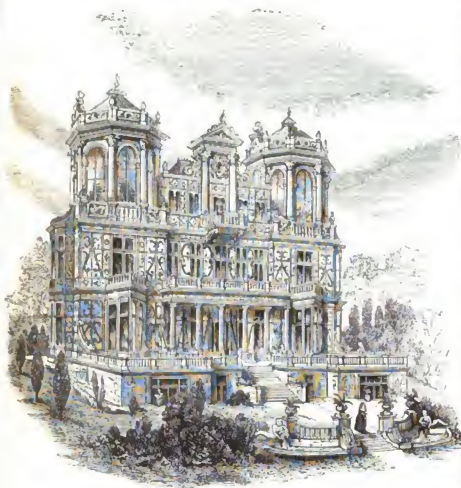
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MUNICIPAL BUILDINGS, BELFAST, IRELAND.
Plan.

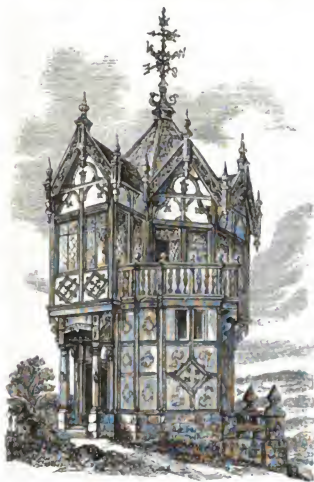


BELFAST TOWN HALL.—MR. A. T. JACKSON, ARCHITECT.

PICTURESQUE ARCHITECTURE.



Design for a Villa in the Old English Wooden Style.



Design for a Bath House and Summer Room.

[See p. 277, ante.]

RAILWAY MATTERS.

A DEPUTATION of tradesmen and other inhabitants of White Horse-street, Ratcliff, have waited on Mr. Paget to complain of the Great Eastern Railway Company, which had completely blocked up the northern end of the street, a few feet from the Commercial-road. This had continued for upwards of five weeks, to the serious detriment of trade. The street was the great outlet for vans, wagons, carts, and other vehicles from the numerous coal-wharves and other water-side premises to the northern parts of the metropolis, and all that traffic was stopped. A tradesman said a bridge, which continued the Blackwall line of railway over the street had exhibited symptoms of decay, and the buttresses had given way. What he and his brother tradesman complained of was, the delay in pushing the works forward. Mr. Paget said he could not interfere until the case was regularly brought before him by the board of works of the district.

The bridge over the Doe, forming part of the viaduct which supports the Chester and Holyhead line of rails, is to be entirely replaced by the London and North-Western Railway Company; the old wooden fabric being replaced by a substantial one of iron. A foot-path along one side of the bridge open to the public has been suggested, but the company so far reply that the suggestion comes late, as their plans are completed, but the effort to convince them is not to be given up yet.

Mr. John Swan, of Edinburgh, and Mr. Macpherson, goods manager of the North British railway, have submitted to Mr. Tennent (secretary of the Cattle Transit Committee appointed by the Board of Trade) plans of permanent watering-troughs to be placed at special railway sidings where unlimited supplies of water can be secured. These sidings, which may be specially arranged for out-of-the-way places, will cost comparatively little money, while the alteration required in the tracks, by which a top bar will be temporarily dropped to allow the animals to put their heads into the raised troughs, is of the most trifling character. As animals, unlike human beings, will only drink when they are thirsty, these trough-sidings might be conveniently placed about 200 miles apart.

THE RELATION OF THE STATE TO SCIENCE.

LAST week a conference was held at the rooms of the Society of Arts, to discuss the question of the "Relation of the State to Science, and the Necessity for Official Inquiry into the Subject by Royal Commission." Lord Henry Lennox, M.P., presided, and the following resolution was adopted:—

"That the conference at the Society of Arts desires emphatically to affirm the conclusion of the British Association for the Advancement of Science, that a royal commission to inquire into the relations of the State to science is very desirable, and to recommend that the scope of the inquiry be made as wide as possible."

THE ENCLOSURE OF BRISTOL EXCHANGE QUADRANGLE.

AT a recent special meeting of the town council, the Corn Exchange Committee presented a report and recommended the carrying out of a plan prepared by Mr. E. M. Barry, architect, for covering the quadrangle of the exchange, at a cost of about 4,000*l*. By this plan, according to Mr. Barry's report,—

"The central area is enlarged to 55 ft. by 55 ft., from 50 ft. by 50 ft., as at present, which would add greatly to its convenience and architectural effect. To obtain this advantage, and to avoid the danger of darkening the ground-floor corridors, the latter are somewhat reduced in width by setting back the columns, though still of convenient and handsome dimensions. Galleries are placed on the upper floor, and the whole internal area, including the galleries, is covered with a roof, giving a total height of 57 ft. to the lantern. In order to avoid the objections to a roof of iron and glass over galleries filled with people, this mode of construction is confined to the central area, and the roofs over the galleries are of an architectural character, with a double-gazed skylight in the middle of each bay. In consequence of the doubt before explained of the adequacy of the present columns to support such a construction, they are raised to the upper floor, and their place taken on the ground floor by new columns, with an appropriate entablature of the Doric order. This order, being of a stronger character than the Corinthian, is better calculated to support the weight of the galleries, and is architecturally suitable for the lower of two orders. The galleries might be level, or fitted with rai*l*ings; in the latter case, they would provide sitting accommoda-

the church. The seats in the nave and transepts are open, and made of pitch pine. The seats in the chancel, built at the expense of the lay rectors, are of oak, and the roof of the chancel, a cotta, executed by Messrs. Blashfield, of Stamford, from a design of Messrs. Cory & Ferguson. The communion railing was carved by Mr. Pickering, of Carlisle, by whom also the foliage and decorations of the capitals and the capitals supporting the galleries were brought. The organ, which was built by Messrs. Holt, of Edinburgh, and cost 200 guineas, is placed near the pulpit in the north transept. The church is warmed by hot-water pipes of peculiar construction, whereby the surface of the pipes forms the floor, and much less heat is lost than when the pipes are laid in trenches with a great deal of masonry. The masonry of the church is the work of Mr. Henry Graves, of Aspatia, builder; the joiners' work has been done by Mr. Henry Dent, of Cockermouth; the plumbing, by Messrs. Thomson & Son, of Carlisle; the painting, by Messrs. Snee & Morgan, of Carlisle; and the heating apparatus was supplied by Mr. Clark, of the same place. The cost of the church, which is capable of seating 300 persons, has been about 4,600l.

Widewater.—A new church, dedicated to St. Philip, at Wedbarn, in the parish of Særborg, Westerstehring, has been erected. The edifice, which has been erected through the liberality of the late Baroness Windsor, is from the designs of Mr. Freedy, of London, architect, and is in the Early Decorated style of Gothic. The ground plan comprises a nave 60 ft. long by 22 ft. wide; chancel, 28 ft. long by 15 ft. wide; a vestry on the north side, and porch on the south-west. The accommodation is for 200 adults and children. There is a stone bell gable over the chancel arch. A suitable dwarf wall and an iron railing with entrance-gates encloses the site on three sides. The materials used are the local stone from the Howell quarries, with Bath stone-dressings, bands of Red Finsial stone being introduced on the exterior, as also on the interior facing, which is of stone throughout. The roofs, which are open-timbered, are of red deal and pitch pine, boarded and covered with Staffordshire tiles. The font is of Falswick stone, with polished shafts of Irish green marble, and has an open oak cover. The pulpit and stairs on the north side of the nave are of English oak, with carved panels. The prayer-desk, chancel seats, altar table and rails, are of the same material, and the benches in the nave of stained deal. The windows are glazed with plain cathedral glass, of two tints of green, with the exception of the east window, which is filled with stained glass designed and executed by the architect, and contains the following subjects:—The centre light the Crucifixion, having on either side types of the same, namely, setting up of the Brazen Serpent, and Adam's offering up Isaac. In the transeps over the centre light is Our Lord in Session in His Mediatorial Office, with angels in the side tracery. The passage spaces in the nave and chancel, and the porch floor, are laid with Godwin's tiles. The church is heated on the hot-water system by Mr. Skinner, of Bristol. The carving is the work of Mr. Boulton, of Chisleham. Messrs. McCann & Evers were the contractors; and Mr. Smith, the clerk of works. A reredos, constructed for the most part of Carbasianian porphyrites brought from Rome by the late Lord Plymouth, is in course of execution by the architect. The design consists of the material arranged in bands and patterns. There is a central cross in white marble flanked on either side by panels containing angels bearing musical instruments, executed in glass mosaics on gold backgrounds. In the side compartments are the Alpha and Omega, and the Monogram of Christ, incised in coloured cements on white alabaster.

Colbury (New Forest).—A new church at Colbury has been consecrated. Mr. and Miss Ibbotson called in Mr. Ferrey as architect. The edifice has cost between 2,000l. and 3,000l. It is in the Decorated style of architecture, and consists of a nave and chancel, with a vestry and north porch. Over the western entrance is a bell turret, about 60 ft. high, the frame being of oak, with ornamental carvings in the upper part, and the covering eleft oak shingle. The walls are of brick and field flint, the quoins and dressings, both within and without, being of Cornish stone. The nave has an open-timbered roof, filled in at the back of the rafters with V-jointed boarding. The roof of the chancel is polygonal, with moulded ribs. The outer

covering is of local red tile, with banded courses. The internal walls up to the window sills are lined with Maw's tiles, supplied by Messrs. Stanger & Sons, of London. The encaustic tile pavement of the sanctuary is also of Maw's manufacture, and so is the reredos, though here mosaic has been introduced for the various sacred symbols and emblems. The pulpit, at the south end of the chancel, is of stone, having panels carved by Mr. Ferrey. Near the north porch is a stone font, the upper portion, bearing the typical flowers of the style in which the church is built, being supported by a series of arches, the pillars of which are of coloured stone. The east window has been filled with stained glass as a memorial of the late Mr. Ibbotson. The three principal lights contain the Resurrection, the raising of Lazarus, and the raising of Jairus's daughter, the geometrical portions of the head of the window being filled with a suitable design. Accommodation is provided for about 200 persons, the seating being stained deal benches, and either side, has been met by Mr. and Miss Ibbotson. The builders were Messrs. Goddard & Son, of Farnham, who have also nearly completed the parsonage-house. Mr. Charles Stapleton was clerk of the works. The grounds have been laid out by Messrs. Horsman & Son, nurserymen, Longwood, near Farnham.

Barkston.—The ancient church here having fallen into decay, has just been restored from the designs of Mr. Ewan Christian, of London. In removing the old plaster, at the east end of the north aisle, was discovered on old Norman door, blocked up; this has been retained. The church was closed on Quinquagesima Sunday, 1869, and the work begun by Mr. A. Grove, of Milton, near Chipping-Norton, whose contract was accepted.

Renaldkirk.—The church restoration being nearly completed, service has been resumed in the edifice. The works have been carried out, from the plans of Mr. Haswell, architect, North Shields. By means of outside drainage, the damp which formerly affected the walls has been dispelled; and the removal of the gallery has made the church lighter, as well as done away with a structure that deformed the interior of the building. The large west window, formerly obscured by the gallery, is now revealed in its integrity. The high-backed pews remain.

Montacute.—The ancient little church at Montacute, near Yeovil, which has for a long time past been badly out of repair, is to be thoroughly restored. It is the parish church, and is dedicated to St. Katherine. The recent examination has discovered in its relics of Norman architecture. The plan for the work of restoration was prepared by Mr. Hall, architect, London, who directed the pulling down and restoring (in the local "Ham stone") of the nave and transeps, the substitution of new open benches for the antiquated high pews, &c. The tower will remain as it is, but the rebuilding of the other portions of the edifice is absolutely necessary. The plan also provides for the repainting and bringing in view of an old window at the western end of the church, which has hitherto been partially blocked up and obscured by the rising-loft. The transeps belong to the Phillips family, of Montacute House, who will accordingly bear the expense of the restoration to that extent. Tenders for carrying out the work were invited, and the contract has been accepted by Mr. James Pudden, of West Coker, the amount of whose tender was 917l. There were eight other tenders, the highest of which was 700l. above the one accepted. The greater part of the money required has been subscribed.

Revelin (Norfolk).—The church of this parish has been re-opened after having undergone a repair and partial restoration. It has of late years presented an appearance of desolation; its chancel destroyed and gone; its window tracery patched with wood and red brick; its modern porch miserably dilapidated; its walls thrust out of the perpendicular; its east gable cracked by the pressure of an ill-constructed roof, erected some seventy years ago, which has of late been liable at any time to fall in from decay; and its tower, with its floors gone, and its sounding windows in ruin. The repair and partial restoration have been undertaken, in consequence of the very liberal response which has been made in the neighbourhood to the appeal of the vicar, the Rev. B. B. Slipper. The Rev. J. Barham Johnson, rector of Welbourn, has given attention and trouble to the work while

in progress. The architect has expended the very limited funds which were available for the restoration in an economical manner. The form of the original roof could be gathered from a curved brace and the impression of a pultrine, and it would have been most desirable to restore it, thus repeating the local type of broad-naved churches found at Easing, North Tuddenham, and elsewhere; but to do so would have involved patching down and reconstructing the north wall, with its doorway and windows, and the buttresses have been rebuilt in cement, the walls have been repaired, and the simplest possible roof, supported by posts from the ground, and stiffened by longitudinal and transverse curved braces, has been made to relieve the side walls from pressure, and to give to the roof the appearance of late years the appearance of a church, with nave and side aisles, a treatment which is found in the ancient church of Winterston, in this county. The restoration of the chancel being found impracticable, a raised dais, paved with tiles, for the holy table, with singers' seats on either side, has been placed in the chancel. The remaining space has been provided with open benches of deal, and the tower has been made available for a vestry. The porch, the stone and glass of the windows, and the tower sounding windows, have been patched up as much as the funds would admit. Of the contract was taken out by Mr. Hubbard, of East Dereham. The architect was Mr. Edward J. Tarver, of London. During the progress of the work, crocketed fragments of the ogee-headed niche in the east wall and other remains were discovered.

SCHOOL-BUILDING NEWS.

Tasmeath.—A new day-school, which will accommodate more than 300 children, has just been erected by the Roman Catholic of this town. Mr. C. Claron was the builder, the cost being 400l.

Southampton.—New Roman Catholic Schools have been opened in Begle-street. Mr. R. Critchlow was the architect. The cost is about 750l. There are two schools, each one on the ground-floor, 35 ft. by 20 ft., and the other upstairs, 40 ft. by 30 ft.; each is 15 ft. in height, with a class-room in the rear, 18 ft. by 12 ft. The upper room is lighted by fire, and the lower by four two-light windows, which extend to within 12 in. of the ceiling, and the best to rest in the ventilation of the air is aided by a series of Boyle's ventilators (recommended for excluding downward draught), fixed in the outer walls. The style is after the domestic architecture of the sixteenth century, adapted to harmonise with several of the old buildings for which St. Michael's square is noted. The front is entirely of brick, the roof line being broken by three gables with ornamental vergeboards. Mr. Laver is the builder.

Lincoln.—Four memorial stones of the new Sunday schools in Clasket-gate have been laid. These schools, when completed, will be the largest in the city. The main building comprises two rooms, 70 ft. by 34 ft., affording accommodation for upwards of 850 children, reckoning 6 superficial feet per child. Attached are four class-rooms or retiring-rooms, raising the accommodation to nearly 1,000 children. By glazing the windows is proposed to separate the class-rooms from the retiring-rooms for classes on the Sunday; when the rooms are used for public meetings the doors will be thrown back, and the whole space will form one room. The estimated expense, including lighting and fitting, &c., is upwards of 1,200l. The necessity of making it to be plain and substantial, to correspond with the adjoining chapel.

St. Silas, Islington.—The new schools, which have been erected in Vittoria-place, Barnsbury-road, have been formally opened. They have been built in accordance with the regulations of the Council on Education, and receive the maximum Government grant of 417l., and a grant of 250l. from the National Society, independent of great assistance from the Bishop of London's Fund. The building, which is in three stories, is intended to accommodate a total number of 417 children; the lower story, comprising a room of 64 ft. by 18 ft., and a class-room, is appropriated to the infant school; the middle story, containing the same accommodation, to the boys; and the upper floor, consisting of a room 43 ft. by 18 ft., and a class-room, is devoted to the girls. There are separate entrances, and two playgrounds. Messrs. Dove, Brothers, were the builders; Mr.

Edwin Clare was the architect. The amount of the contract for the work, inclusive of walls to the playgrounds, was 18,431, and the actual expenditure was kept within this limit.

STAINED GLASS.

St. James's, Marylebone.—This church is in course of restoration, and the Rev. Sir Lionel Darelle, bart., of Fetherston Court, Gloucestershire, has commissioned Mr. George Rogers to execute six stained windows, containing life-size figures of St. James, St. John the Divine, St. Peter, the Virgin Mary, Moses, and Elias. These windows are intended to be dedicated by Sir Lionel Darelle to the memory of his late sister, Emily Mary, wife of the Rev. A. B. Lechmere, of Hensley Castle, and other branches of his family.

Ringwood Church.—Two windows, executed by Messrs. Ward & Hughes, of London, are being placed in the lancet lights of the chancel, to the memory of the late vicar, the Rev. R. Holmes Tuck. The subjects are full-sized figures of St. Peter and St. Paul, the patron saints of the church. In a small panel over the figure of St. Peter is a design illustrating the walking on the water, while the group in the corresponding window illustrates the conversion of St. Paul. The cost of these windows has been defrayed by local subscriptions.

St. Patrick's, Brighton.—This church, in Cambridge-road, has just received an addition in the shape of a stained-glass window, presented by members of the congregation to the incumbent, the Rev. J. O'Brien, D.D., and Mrs. O'Brien. The design is of two-fold character, the lower portions of the five principal lights representing Christ in his humiliation, and the upper portions, Christ in glory. The lower part presents a connected scene of the Nativity; Virgin and Child in the manger of Bethlehem, occupying the centre, with the star of Bethlehem above; on one side are the shepherds in attitudes of adoration, and on the other the Magi presenting their gifts. Above, the centre is occupied by a representation of Our Lord enthroned, surrounded by the aureole, and carrying the sphere surmounted by a cross. On the right hand of the throne appear St. Peter, carrying the keys, and St. John the Baptist, with "raiment of camel's hair" on the left are St. Paul, bearing the sword of the spirit, and St. Patrick with the type of evil, the serpent, beneath his feet. The tracery of the upper part is filled in with angels (two of them playing musical instruments), the emblem of the lamb and flag, and chromatic devices. The figures are life-size.

Emmott Church.—A stained-glass window, the work of Mr. Wailes, has just been placed in the western end of the tower of this church, in memory of the late Mr. Simmon, for many years a resident in the parish. The window is perpendicular in style, 18 ft. high and 12 ft. wide. It is divided into four bays by the vertical shafts, and in each bay is depicted a group of figures illustrative of the early life of our Lord. 1. The Nativity, with the Shepherds adoring the Infant Saviour; 2. The Magi presenting their Offerings; 3. The Presentation of our Lord in the temple; 4. Our Lord surrounded by the Jewish Doctors. Emmott Church has a triple lancet window at the east end, representing the closing scenes in the life of our Lord, also the work of Mr. Wailes.

Pershore Abbey Church.—This church has received a further adornment by the insertion of two large stained windows in the eastern aisle, as a memorial of the late Mr. Edwin Hall. They are the work of Messrs. John Hardman & Co., of Birmingham. The series of subjects chosen illustrate the chief events in the history of the abbey from its foundation. In the first window are—1. Egidwade bringeth the Saint to Pershore; 2. Abbot Foldbrieth cometh to Life; 3. St. Edburgh setteth her Fellows; 4. Ethelred and Elifeda, Benefactors; 5. Beornoth receiveth a Charter from Conulf; 6. The Benedictine Rule brought in; 7. St. Edburgh chooseth the Religious Life; 8. King Edgar giveth Charter; 9. Earl Odda becometh the Monk; 10. King Ethelred giveth Pershore to Osmund; 11. The Danish Fery; 12. Alpheo (Alderman), plundereth the Abbey; 13. The Saint worketh Miracles; 14. Sweyn is defeated. The upper part of the window is filled with figures of King Canute, King Edward I., King Henry III., Bishop Britnyr, and Ureo D'Abbinet. The second window also contains fourteen subjects, namely,—1. Abbot Upton is drowned; 2. Abbot Elerieth prebath

Crusade to Llewellyn; 3. William de Beauchamp, Benefactor, dieth; 4. King Charles breaketh down the Bridge; 5. Harley is made Knight in Jerusalem; 6. Fire breaketh out on St. Urban's Day; 7. King Edward visiteth Pershore; 8. Queen Elizabeth passeth by; 9. The Confessor giveth lands to Westminster; 10. Abbot Guido is deposed for Simony; 11. Fire burneth Church and Charles; 12. Monastery is dissolved; 13. The Fair holden in the Churchyard; 14. The Church of Holy Cross restored. This subject contains full-length portraits of the Bishop of Worcester, the Dean of Westminster, the late Dr. Williamson, and Mr. Ball. The upper lights of the window contain figures of King Edward III., King Henry V., King Henry VI., and Queen Victoria, as also of Nicholas, bishop of Dunkeld, and Bishop de Polton.

St. Mark's, Woodhouse, Leeds.—The Rev. R. Kettellwell, vicar of Woodhouse, has recently erected a stained-glass window in St. Mark's Church, Woodhouse, to the memory of Ann Elizabeth, his wife. The style of the window is Perpendicular, and it comprises three lights and tracery, the former of which are occupied by the subject of the Sermon on the Mount, extending over the three openings, and including the canopies and ornamentation of suitable design. The tracery and portions of the canopies contain the Beatitudes, with appropriate inscriptions. The glass was from the works of Messrs. R. B. Edmundson & Son, of Manchester.

Books Received.

The Rural Life of Shakespeare, as illustrated by his Works. By C. ROACH SMITH. London: J. B. Smith, 8, Abchurch-lane. 1870.

This vast amount of general and special knowledge reflected by Shakespeare's works includes evidence which might be presented, and indeed which has, to some extent, already been presented, to favour the supposition of his having studied for many professions or trades. "The Tempest" would tend to prove him a sailor; "Hamlet," and other plays, a lawyer and mad doctor; and so forth; but, however that may be, Mr. Smith, we think, has clearly shown Shakespeare's intimate knowledge of gardening and rural life. The force of the numerous allusions to such subjects consists in their vivid and life-like character, as well as in their endless recurrence, and the obvious familiarity with rural modes of thinking, which manifests itself in wit and play upon words, and in conclusions not likely to present themselves to mere users of rural verbiage.

Thus, for example, to the unfamiliar bolder of a splendid display of bloom in early spring, the first and leading idea is naturally that it promises a fine crop; but that is far from being the notion of an experienced gardener, which Shakespeare often reflects in his writings, as in King Henry IV., part ii., act 1, scene 2—

— " 'Tis as in early spring
We see the appearing buds, which to prove fruit
Hope gives not so much warrant as despair
That frosts will bite them."

And this familiarity with gardening appears in his witty play upon words in use among horticulturalists, such as Mr. Smith instances from "As You Like It," about grafting. In act 3, scene 2, Touchstone says, "Truly the tree yields bad fruit;" and Rosalind replies, "I'll graft it with you,—a medlar; then it will be the earliest fruit in the country, for you'll be rotten ere you be half ripe; and that's the right virtue of the medlar." The drift of this some of Shakespeare's best commentators have failed to see; and Stevens, not understanding horticulture himself probably, says as to it, "Shakespeare seems to have had little knowledge of gardening;" adding, the medlar is a late fruit, not an early! The remark of Mr. Smith, that Shakespeare knew what he said, and in this very peculiarity lies the wit and propriety of Rosalind's retort. To Touchstone's remark about the tree bearing bad fruit, Rosalind's reply may be thus interpreted:—"I'll graft it with you,—a meddling fellow,—a medlar; and, as you are already much decayed, you will change the character of the fruit by hastening its ripening before it is rotten, as all such decayed medlars tend to do, thus making this the earliest instead of the latest fruit."

The same play furnishes a passage equally misinterpreted. Rosalind says she found the love-sick to be on a palm tree in the forest of Calimach's remark, "A palm tree in the forest of Arden is as much out of place as the lincens in a

subsequent scene." Now palm is another name for willow, and willow was the tree, therefore, on which the sonnet was appropriately fixed.

Mr. Smith has clearly made out his case, by help of the numerous quotations which he has gleaned from Shakespeare's works, in his interesting and curious little treatise.

Recollections of Eton. By an ETONIAN. With illustrations by SIDNEY P. HALL. London: Chapman & Hall, 1870.

It would not be difficult to find fault with this volume; to ask if Eton masters had taught the writer to say,— "With that he produced a couple of half-sovereigns, which neither of them were slow to accept, or 'I paid him out for it, however, if it was him' (p. 116); and to point out that it is not the growth of the silk-worm that eats the lettuce-leaves (p. 90), and so forth; but we have no desire to take that line. The book describes as a boy would describe life at Eton,— its sports and pastimes rather than its intellectual struggles,—and will give pleasure to many other boys.

Elementary Principles of Carpentry: a Treatise on the Pressure and Equilibrium of Timber Framing, the Construction of Floors, Roofs, &c. By THOS. TRENKLE, C.E. Fifth Edition. London: Lockwood & Co., 1870.

To the third edition of Tredgold's well-known work, Mr. Peter Barlow added an appendix of considerable value, containing plates of roofs. The new edition, the same of which we have now to announce, contains this with a full examination of the roof and vaulting of King's College Chapel, Cambridge. Some of Tredgold's tables are a little under the mark; nevertheless the volume ought to be in every architect's and every builder's library, and those who do not already possess the third edition, ought to avail themselves of the new issue by Messrs. Lockwood & Co.

Miscellanea.

The Historical Manuscripts Commission.—The first report of the Historical MSS. Commission has been published. The Commissioners say their object has been fully appreciated and favourably received. Many collections, the existence of which was unknown, have been brought to light and submitted to their inspection. They say that had the funds placed at their disposal for the appointment of inspectors been less limited, larger results would undoubtedly have been produced. Very important and valuable materials have already been brought to light, illustrating some of the least known periods of the history of Great Britain from the Saxon era down to the seventeenth century. The Commissioners hope that the enlarged powers of compiling and publishing calendars of the more important papers that may be brought before them, they will be able to render a most essential service to the historical student, not only in this country, but throughout the civilised world. In the Appendix (which consists of 133 pages) there are set out, as specimens of the results of the Commission's work, numerous documents of great historical interest. As a single instance out of many, we may state that in the collection at Montacute House, in Somerset, amongst a bundle titled "Law Papers," a collection of original documents relating to the Disruption of the monasteries, which a prior himself knew nothing, and probably the bundle had never been noticed since the year 1612.

St. Mary Magdalene, Taunton.—The following notice has been freely circulated throughout the parish:—"The plan adopted by the parish in vestry provides free and easy access, by steps, into the chancel, on the north and south from the cross-aisles, and on the west from the nave. The faculty requires strict adherence to the plan. The north and south entrances have been entirely closed, and that on the west obstructed by a wall and gates for its whole width. A few parishioners have commenced in the Consistory Court, at Wells, to recover to the parishioners their right of unobstructed access to the chancel by these three approaches, in accordance with the plan and faculty and the vote of vestry thus illegally infringed, and appeal to their fellow parishioners for co-operation and support. Protestants' principles as well as legal rights are clearly involved."

Artists' Benevolent Fund.—The sixty-first anniversary festival of this institution was celebrated by a dinner at the Freemasons' Tavern on Saturday, the 2nd inst. Viscount Enfield, M.P., presided, and in giving the toast of the evening, said the fund was established in 1810, and received from George IV., its patron, a royal charter on the 2nd of August, 1827. The object was now the patron of the institution, which consisted of two separate and distinct branches—the Artists' Annuity Fund and the Artists' Benevolent Fund. The Artists' Annuity Fund was raised and wholly supported by the contributions of its members for their own relief in sickness or superannuation. Three hundred names were at present members of the annuity fund, and all artists of merit in painting, sculpture, architecture, and engraving were eligible to become members. The Artists' Benevolent Fund, for the relief of the widows and orphans of members of the annuity fund, was supported by the donations and subscriptions of the patrons of the arts, by artists and by the annual contributions of the members of the annuity fund. Since the formation of the fund \$30,812 had been distributed in relieving widows and orphans of British artists. The toast of "The Chairman," proposed by Mr. S. Solly, and "The Royal Academy," given by the Chairman, and acknowledged by Mr. Lambton Young, followed. Mr. W. B. Woodhouse, President of the Academy, connected with the Fine Arts," expressed his opinion that in England young artists had not the same opportunities of obtaining the technical and manipulative knowledge of the painter's art as men had in France, where they were admitted to the studios of painters of eminence, and saw them at work. The result was that on the Continent, as an artist began his career, where in England he so frequently left off. He should be glad to see our English artists opening their studios to young students more freely. Among the other toasts were, "The President and Members of the Artists' Annuity Fund," proposed by Captain Dighton; and "The Artists' General Benevolent Institution," given by Mr. G. J. Diamond. Mr. Lambton Young, the secretary, read a list of subscriptions, amounting to upwards of 450*l*.

New Episcopal Chapel at Cuthbert, Scotland.—A new Episcopal chapel, now being built, at the foot of Col. Wm. Sharpe's Erskine, of Dunmarle Castle, on a fine terrace in her grounds. This edifice, which is intended to bear the name of St. Serf, has been designed by Mr. R. Anderson, of Edinburgh, architect. The style adopted is Transition (end of the twelfth century), being the style exemplified in the earliest remaining parts of Culroch Abbey. The building is intended to serve as a mortuary chapel for the founders, as well as a place of worship for the Episcopalian families of the neighbourhood. It is of oblong shape, measuring internally 66 ft. by 18 ft. The east end is apical, and the west gable is surmounted by a bell-tower, having two tiers of openings for a peal of three bells. This gable is buttressed, and has a large circular window filled with tracery. The entrance to the chapel is on the south side, near the west end. The apse is lighted by five single-light windows, the semicircle internally being arched. The chancel has a two-light window on the south, and an archway on the north side for the organ. From the organ recess a nave is given to a small vestry. The nave is lighted by five single-light windows on each side. The whole of the chapel is vaulted internally with wood. The church will be fitted up in the usual manner for the clergy and choir, and the nave will be furnished with open deal benches for a congregation of about eighty.

Competition at Prescot.—The local board of this place have recently decided upon competition schemes for the sewerage and improved water supply of the district. The first premium of 100*l*. has been awarded to plans by Mr. Brierley, civil engineer, Blackburn, who has been retained to carry out the works. The second premium of 35*l*. has been awarded to Mr. W. A. Richardson, of Transmere.

Passing the Glass with a Vengeance.—The other morning, at a draper's in Liverpool, a gentleman, instead of going out by the doorway, inadvertently stepped into one of the windows, which was empty at the time for the purpose of being redressed, and before any of the assistants could interfere had made his way into the street, through a very large lead plate-glass window. Fortunately, the only injury he received was a cut on the left cheek.

The Objectionable Sculptures on the Facade of the Paris Grand Opera House.—M. Carpeaux assigned to a photographer, named Appert, the exclusive right, which he assumed to be still in his possession, of making photographic copies of his group of dancing girls. Another photographer, named Raudoult, considering that all the world has a right to photograph public buildings and their ornaments, fixed his apparatus in the public street, brought it to bear upon M. Carpeaux's statues, which are popular, and placed in the shop windows a representation of the sculpture. M. Carpeaux and his assignee, M. Appert, brought an action against M. Raudoult for infringement of copyright. The Court of First Instance of the Seine ruled, however, that the sale by M. Carpeaux to the Emperor's Minister, without making any reservation of the right to photograph his statues, was an absolute alienation and a bar to his action. M. M. Carpeaux and Appert were, therefore, sentenced to pay 3,000 francs damages to M. Raudoult for seizing his photographs, and to defray all the costs of the litigation.

Masters and Men: Non-liability for Accidents.—A case of importance to workmen and their employers was tried at the Liverpool assizes on Tuesday last. A painter in the employ of a local firm was sent to work upon a scaffold which had been erected by other men in the same employ, and the structure giving way, the poor fellow was so seriously injured as to be permanently debilitated from following his profession. He now brought an action against his employers to obtain compensation. Mr. Justice Willes ruled that the action could not be maintained, for it had been decided over and over again that a master would not be liable for an accident happening to one of his workmen, through scaffolding erected by other of his workmen, unless some misconduct on his part was proved.

It had been the law for the last thirty-three years that a servant could not bring an action against his master for the negligence of any other servant in the common employ. The plaintiff was accordingly non-suited.

Bilston.—At a special meeting of the Town Commissioners, after going through the modified plans for the enlargement of the baths, the Board accepted the following tenders:—Messrs. Compson & Sons, for lengthening the boiler, and for new tank, 21*l*. 10*s*.; Messrs. Claridge & North, for the engineer's work and new baths, 120*l*.; Mr. S. Sansome, for the general builder's work for enlarging the swimming-bath, 180*l*.; and Messrs. Garratt & Holmes, for painting, 69*l*. Total, 390*l*. 10*s*.—At a recent meeting of local ratepayers it was resolved, by a large majority, to adopt the Free Libraries Acts.

Design in Berlin.—It has been determined to form an exhibition in Berlin between the 10th and 24th of the present month of April, with the object of generalising and elevating the study of drawing, in giving teachers and the public the opportunity of judging of results obtained, and of the efforts that are being made towards their improvement. The exhibition is to be divided into three groups; the first to consist of models and examples; the second of works of all kinds produced by pupils; the third, of instruments and materials of all kinds connected with drawing.

University of London.—The new building of the University of London, in Burlington-gardens, illustrated in our pages, will be opened by the Queen in person on Wednesday, May 11. Her Majesty will be accompanied by the Prince and Princess of Wales and the Princess Louise. We may venture to say it will be satisfactory to the profession should it be found that her Majesty intends to confer honour on the architect of this building, the merit of which is undeniable. Mr. Pennington is a public servant of long standing.

The Round Church at Worthampton.—An appeal is being made to the public for additional funds for the completion of the restoration and enlargement of St. Sepulchre's Church, or rather for the restoration of the old round church as a vestibule to the new. For this 1,800*l*. in all are required, and of that sum 1,400*l*. have been subscribed. The round church is in a sad state, and cannot long be allowed to remain as it is.

The Taunton Surveyorship.—Mr. Hargreaves, surveyor, has sent in his resignation to the Taunton Board of Health, and it has been accepted.

City Market Accommodation.—At a special meeting of the Common Council last week, a motion was proposed by Mr. Radkin for disestablishing Billingsgate and Leadenhall markets, and erecting in their stead a large fish and poultry market on ground belonging to the Corporation of London in the immediate neighbourhood of Smithfield. Mr. Fricker moved an amendment that it was desirable that the fish-market at Billingsgate and the poultry-market in Leadenhall should be enlarged and improved, and that the Markets Committee be instructed to obtain plans with estimates of the cost of such improvement, and submit them to the Court of Common Council. Eventually, the amendment of Mr. Fricker was carried by a considerable majority.

The Exhibition Model of Lincoln Cathedral.—The *Gentleman's Magazine* devotes a rather lengthy paper to a description of "A Wonderful Building."—that is, the model of Lincoln Cathedral made by a poor farm-labourer out of old bottle-corks, and which was exhibited at the International Exhibition of 1862. It took ten years, we are told, to build up this cathedral of corks, cut and filed to look like stone; and a million corks were consumed in the erection. It produced 800*l*. at the Exhibition, and has gained its inventor a yearly income ever since. "Altogether he calculated that he had reaped 3,000*l*. from the structure. For a small portion, even like the southern porch, with its corks angels and corks devils going to 'seven and 'ill respectively, he had been offered 16*l*.; and for a single pinnacle, 2*l*."

The New Corn Exchange, Cambridge.—This question is again postponed. Counsel's opinion as to the legality of procuring property for the purpose of building a Corn Exchange is that the corporation had no power, under the several Municipal Acts, to do so. The market committee, therefore, after a good deal of discussion, have resolved that proceedings should be stayed, and that a further opinion of counsel should be taken on the subject. The local Chronicle states that advertisements for tenders for the new Corn Exchange had been sent for insertion in the local papers, and that Mr. A. D. Claydon had been instructed to sell the materials of the buildings now on the site.

The Northern Architectural Students' Society.—On Saturday, the 2nd, this society held its first on-door meeting at Boston Delaval Hall. The members present inspected the interior as well as the exterior of this fine building. The hall was erected during the earlier portion of the eighteenth century, from the designs of Sir John Vanbrugh, architect. It was greatly injured by fire in the year 1822, and has not been restored. Fortunately, the destruction is mostly confined to the interior, so that the exterior is left almost intact. The Anglo-Norman church in the grounds was also visited.

Birds and the Fashion.—According to M. Ponchet, the architect of birds has changed with that of men. In former days, when the swallow's nest was built against Gothic edifices, it made a semi-globular nest with a very small rounded entrance, but in the new streets of Rouen its nests are now found to be of a semi-ovoid instead of semi-globular shape, and the entrance is a long transverse cleft.

Worcester Cathedral.—The Dean and Chapter have contracted with Messrs. Colles & Collis, of Tewkesbury, to pave the floor of the Lady Chapel and its two aisles, and also those of the north-eastern and south-eastern transepts and their aisles, with red and yellow Mansfield stone, white Portland stone, and black marble, from designs of the thirteenth century, prepared by Mr. A. E. Perkins, the resident architect.

Worse and Worse.—The following tenders were sent in for alterations at 51, St. Martin's Lane, for Messrs. Hayward & Co. Mr. W. F. Potter, architect:—

Stokes & Gill	£ 429
Watson, Brothers	296
Perkins	265
Hammert	238
Hobson (accepted)	148

Lectures on Health.—The Social Science Association have made arrangements with Dr. G. J. F.R.S., for the delivery of four lectures on "Health and Disease" in their economic relations. The first will be given on Tuesday evening, April 12th, at 8 p.m., in the room of the Society of Arts.

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LIQUID MANURE-CARTS,—ON SALE, Twelve Galvanized
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84 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in.

85 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in.

86 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in.

87 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in.

88 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in. 10 ft. 6 in. by 3 ft. 6 in.

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C E I L I N G F L O W E R S,
 PANELS, DOOR HEADS, CORNICES, TRUSSES, CAPS, &c. IN CARTON PIERRE, PAPIER MACHÉ, AND COMPOSITION.
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 A SUBSTITUTE for PAINT, and at HALF
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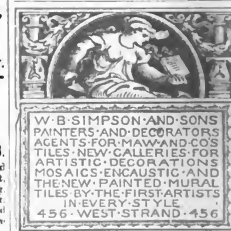
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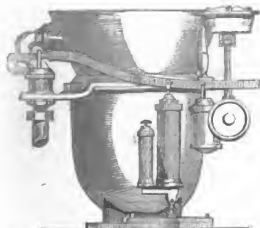
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ELEVATION OF CLOSET, WITH REGULATOR ATTACHED.

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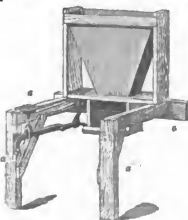
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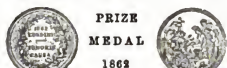
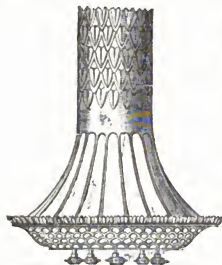
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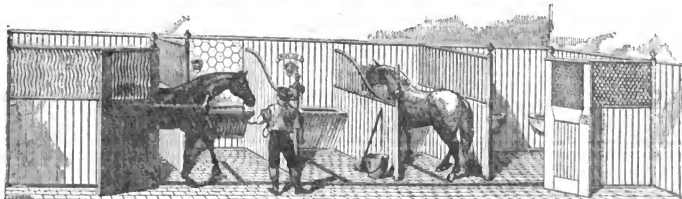
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The whole of which, except the Rack, being enamelled, can be kept as clean as a DINNER PLATE. THE HALTER BALL, ATTACHED BY A NEW IMPROVEMENT, WORKS NOISELESSLY, AND ALMOST WITHOUT FRICTION.

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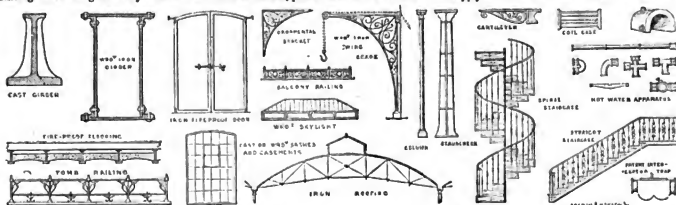
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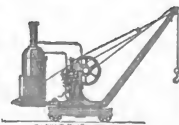
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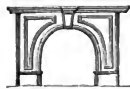
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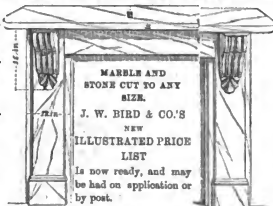
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The Builder.

VOL. XXVIII.—No. 1419.



Recent Travels in Asia Minor.*

T the present moment public attention is directed towards that long-neglected country which is evidently destined to become the road to our Indian possessions.

Whether it be true or not that the Ottoman Government has granted a concession to a French company to carry a line of railway throughout the length of Asiatic Turkey, which is eventually to be extended to Bagdad, and so on to the frontier of India, it is certain that such a line will be made, and that probably before many years have elapsed. The plains of Asia Minor have already been invaded by two conquerors greater than Sesostris and Alexander,—since they carry civilisation in their train;—steam and electricity have already commenced their inroads on that vast continent; telegraphic wires already traverse the highlands, cross the mountain ridges, and dip into the ocean in remote bays on its coasts, while the shrill whistle of the locomotive already rouses the eagle from his eyrie on Mount Sipylos, and startles the cranes and pelicans on the borders of the Cayster and Mæander. Where there are railroads, civilisation must follow; and though at present this country presents the strange anomaly of possessing no roads but iron roads, and though the trains frequently pass close to the haunts of brigands who live in defiance of the Government, yet all this apparently chaotic state of affairs will be set right at last, and probably this naturally prolific country will be at some future time colonised and cultivated by settlers from the West.

* "Travels in little known Parts of Asia Minor, with Illustrations of Biblical Literature and Researches in Archaeology." By Rev. Henry J. Van Lennep, D.D., thirty years Ministry in Turkey. London: John Murray, Albemarle-street, 1870.

We speak advisedly when we use the term "much neglected" with reference to it; for, notwithstanding the fact that it was the theatre of some of the most important events in the history of the early world, and the stage on which strutted the Imperial puppets Sesostris, Cyrus, Croesus, Xerxes, Alexander; though the finest temples of antiquity graced its soil; and though it has formed a theme for historians and poets from the time of Homer, about as much is known of the interior of the country as of that of the Great Sahara. The travellers who have traversed the continent, and left any record of their journey, may be easily enumerated, as they probably do not amount to more than a dozen. Paul Lucas, Leake, Texier, Hamilton, Fellows, and Ainsworth, are, indeed, all whose names occur to us. With the coasts, however, we are better acquainted, as Le Brun, Pococke, Chandler, and Arundel have described them, and the Badrum expedition and the various missions of the Dilettanti Society have made us in some measure acquainted with their ruined cities and temples; but about the interior we have but little information. Therefore the works of all the "pioneers" have an especial interest for us at this period of awakening interest in the future prospects of Turkey; and for that reason we welcome with pleasure Dr. Van Lennep's volumes, containing an account of a journey from Samsoon, on the Black Sea, to Smyrna, and of several excursions to the right and left of the main route made for the purpose of visiting ancient sites. Dr. Van Lennep having resided thirty years in the country as a missionary, and being acquainted with the various languages spoken by its inhabitants, being thoroughly versed in the manners and customs of the people, and having also a taste for antiquarian pursuits, was, as may be supposed, well qualified to give us an accurate description of everything he saw during this interesting journey of five months through some parts of the country but little known, and through others entirely unknown. Leaving Samsoon in April, 1864, he visited Amasia, the capital of the king of Pontus, then proceeded to the important town of Tokat, from which point he made excursions to Sivas and the Star Mountain, and afterwards started on his journey across the continent, going by way of Yuzgat, from which point he visited the interesting ruins of Pterium and Euyuk; thence to Angora, the ancient Ankyra, Bevri-Hisar, and the ruins of Pessinus, Afion-Kara Hisar, Ooshak, Sardis, and so on to Smyrna.

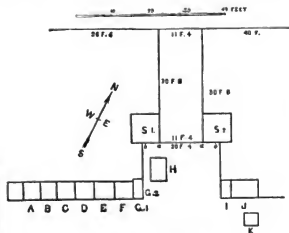
On referring to the map of Asia Minor it will be seen that he thus passed through almost the entire length of Asia Minor, and through the most important parts of Pontus, Galatia, Bi-

thynia, and Phrygia, provinces in which there are many ancient sites still to be identified.

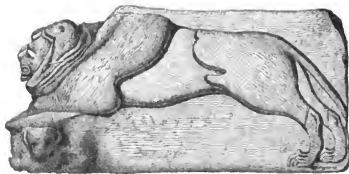
To architects and antiquaries the most attractive portion of his book will be that in which he throws light upon one of the most obscure pages in the history of art,—the art of what Professor Donaldson has aptly termed "Anterior Asia," to which are due the sculptures of Pterium and Euyuk, the tombs of Midas and other Phrygian kings, many of the monuments of Lycia, and all those remains which present no sign of Greek, but many marks of Asiatic, Phœnician, Assyrian, or even Egyptian influences. We all know that certain discoveries have of late years shown that some of the early sculptures in Asia Minor, such as those of the Sacred Way at Brachistide and the tombs at Urgub, exhibit an imitation of Egyptian forms; and that Phœnician origin may be attributed to the grotesque animals on the architrave and frieze of Aesop. We can also trace Egyptian taste in the sarcophagi of the kings of Sidon which are in the Louvre; but in no place is there to be seen such a combination of Egyptian details and Assyrian plan, as in the palace of Euyuk, which Dr. Van Lennep has been the first thoroughly to describe and illustrate. We see here two gigantic sphinxes,—creatures of Egyptian origin rarely to be met with in Asia Minor,—guarding the entrance and supporting pilasters, exactly supplying the place of the winged bulls in the palaces of Nineveh; on either side are large blocks of granite or basalt, with processions of figures carved on them, forming the basement of two wings, which probably supported colonnades, as in Mr. Fergusson's restoration of Persepolitan architecture.* We are enabled to reproduce a plan of the best-preserved portions of the building. The sphinxes are marked on the plan S. 1 and S. 2.

Beyond the sphinxes was apparently the principal corridor of the palace; but everything beyond that has disappeared. A striking proof of the Egyptian origin of these buildings exists in the fact that the god Apis occurs twice in the series of carvings. Hamilton visited the ruin, but describes the sphinxes as enormous birds. Both here and at Pterium Dr. Van Lennep made careful drawings and measurements, which tend to illustrate thoroughly these important remains. The rock carvings at Pterium are well rendered, and show a thoroughly Assyrian character. They occupy the sides of a gorge, which appears to have formed the entrance to a regal sepulchre. The carved surface extends for a length of 124 ft., the figures varying in height from 2 ft. 10 in. to 4 ft. 10 in. Dr. Van Lennep confirms M. Texier's opinion that these

* See p. 306.



Plan of Temple at Euyuk.



Side View of Carving on Block K.

processional rows of figures, which represent the meeting of a king and a queen, each attended by a long train of attendants, signify the introduction of the worship of Astarte, the Syrian Venus Urania, into Phrygia. We refer those who feel interested in the question to the book itself, in which the subject is fairly put before the reader, and thoroughly illustrated.

Amongst the carved blocks of the Palace of Buxant, is one which bears the figure of a bull devouring a ram, or more probably a bull. Of this, which is marked K on the plan, we give a representation. This mysterious emblem, which has never been satisfactorily explained, is frequently met with on the early monuments of Asia, and seems to us to have been imported from Phœnicia, since the earliest example of it we know is to be found on the coins of one of the kings of Sidon. Amongst other places it is to be found on the rock tombs of Lycia. Dr. Van Lenzenp gives an engraving of another from Amyra, and Mr. Pallan dug up a similar group near Claros and Colophon (see Texier and Pallan's Cities of Asia Minor).

At Angora our traveller visited the ruins of the Temple of Augustus. We do not agree with him in the supposition that the yellow tint observable on the marble there and at the Parthenon arises from the fact that the surface has been gilt; but we think that it has been toned down by a coating of yellow encaustic preparatory to the application of the reds and blues by which the marbles were covered, and the friezes heightened, in all buildings that were polychromatised.

By far the most interesting chapter in the book is that in which Dr. Van Lenzenp sets at rest the vexed question relating to the figure carved on the face of Mount Sipylus. High up on that part of the mountain which is the foot of the range of Magnesia and the valley of the Horos there is to be seen a niche, 35 ft. high, in which is a rudely-carved head with the bust of a female figure. All former travellers have in rotation repeated that this figure represents Cybele, the mother of the gods; but Dr. Van Lenzenp satisfactorily proves to the contrary. He remarks that though the features are obliterated, the figure has been so arranged that when it rains, two streams of water fall upon the breasts, and so trickle to the ground, as perfectly to represent the flow of tears, and that these streams have in the recesses of the niche left a bluish deposit on the surface of the rock, which is visible from the plain below, in the form of two dark streaks down the bust and the pedestal on which it stands. This, he says, with justice, must be the "stony Niobe, all tears," described by Homer when he thus sang:—
"Upon arid Sipylus, in the face of the desert mountain . . . Niobe, though taught to stone, still broods over the sorrow the gods have sent upon her!" And by Ovid with still greater precision:—

"She weeps still, and, borne by the hurricane of a mighty wind,
She is swept to her home. There, fastened to the cliff of the mount,
She weeps, and the marble sheds tears even now."
Ovid, Met. ii. 310.

Again, Pausanias, who visited it, says:—
"When standing close to it, the rock and precipice do not show to the beholder the form of a woman weeping or otherwise; but if you stand farther, you think you see a woman weeping and sad." (Attica, l. i. 21, 5.)

Another coincidence in support of M. Van Lenzenp's view exists in the fact that the figure of Niobe; and not far from the lake of Tantalus, the father of Niobe. Our author, however, starts the theory that the figure may have existed from the earliest times, and may have been intended originally to represent Cybele, but that the myth of Niobe must have been derived from it. His explanation of this view is so very ingenious that we give it in full:—

"Certainly, the whole scene around us at this moment agrees remarkably with the Grecian legend, and may be looked upon as the very birthplace of the myth of Niobe. The daughter of Tantalus over whose head, never been the rock was always hanging ready to fall. Tantalus is nothing else than a rock hanging poised in the air (*αεραντιν*), ever threatening to come down, an exact description of the constant disintegration of the face of the hills in this region. Niobe, in her deepest agony, under the over-hanging rock, is the 'daughter of Tantalus.' She is as Cybele, the great

mother—her very boast; and her children struck down to earth," slain by Phœbus and Diana; are the masses of rock, such as we have just passed over, that fall into the valley, separated from the cliffs by the action of the sun and rain. 'They lie unburied on the plain,' Homer tells us, till on the tenth day after, the heavenly gods have them; the fallen rocks being under the influence of the weather. Here, in these mountains of Sipylus are the couches 'of the divine nymphs that dance or stream about Aëtholia;' that is, in this hill now above us are the springs from which flow down the streams that feed the Aëtholia at our feet;—the Aëtholia, 'the son of Sol,' springing, that is, from the melting of the snows in summer. . . . Carved in the most remote antiquity to represent, it may be, Cybele, the deity of a race that preceded the Greek immigration, the circumstances that gathered round it gave rise in the minds of the imaginative Greeks to the whole beautiful legend of Niobe, all stone and all tears, as we see her at this moment, and we here look upon a monument that was even to Homer an object of venerable and unknown antiquity, a monument antecedent not only to history, but in some sense to mythology itself."

FREEMASONRY.*

A GERMAN writer not long ago completed a history of Freemasonry, from, of course, a German point of view, and with considerable approval in his Fatherland. It was translated into English, and mentioned in our page at the time. A second edition of the English version has now appeared.

Wide, generous, and pleasant, with its cornfields and vineyards, universities and moral reforms, Germany is the very site for the luxuriant growth of an embracing, expansive, brotherhood, like that of the Freemasons; but it is not of the German lodges, so much as of the society generally, that we are minutely informed in this work. In various parts of Europe and America there are, at the present day, about 9,000 lodges, with 70 grand lodges, to which they are subordinate, forming invisible connecting lines of fellowship over this vast surface, having for asserted aim the exaltation of mankind in morals. The histories of these lodges in modern times are full of interesting details, if not of the record of well-known names among the members, such as Elias Ashmole in an English lodge, Thomas Boswell of Anchinloch, in a Scottish one; Daniel O'Connell in an Irish one; and Benjamin Franklin in a Pennsylvania lodge; but it is the ancient history of the craft, properly applied to now as its legends and superstitions, that will have most attraction for non-masonic readers.

The legend that every one is supposed to know runs to the effect that the four children of Lamech, and his two wives, Adah and Sella, founded the beginning of all sciences in the world. The eldest son, Jubal, pursued the science of geometry, and abandoned his flocks and herds to build with stones and trees; his brother Jubal taught the science of music; his brother Tubal Cain founded smithwork in all metals; and his sister founded the craft of weaving. Having a foreknowledge of the punishment about to fall upon mankind, they engraved their sciences on two stones, so that they might not be lost when the "vengeance for syn" came. One of these stones was of marble, in the belief that it would not burn if fire consumed all else upon the face of the earth; the other was of clapped latens,* supposed not to be able to drown or sink in any water, if a flood should be the means of destruction. After the deluge, the great-grandson of Noah found one of these stones, and saw the science written on it, and taught it to other people. "And at him," We quote the legend,—"And there was masonry first made much of." Nimrod was a mason as well as hunter, it seems, and fond of his science, or, as we should now say, trade. And when the city of Nineveh and other cities in the East were to be built, he sent his cousin, the king of Nineveh, three scores of masons to assist him. We quote the legend:—"And when he sent them forth, he gave them a charge on this manner. That they should be true each of them to other, and that they should love truly together, and that they should serve their lord

truly for their pay; soe that the master may have worship, and that long to him. And other moe charges he gave them. And this was the first tyme that ever mason had any charge of his science." From this little head of masons, bound together as strangers in a strange land, possessed of the knowledge of a craft that was beyond the understanding of the dwellers in tents, according to this story, came Freemasonry.

So far this legend, with its patriarchal belongings, and enroudings, and discrepancies, its clink of pre-historic tools, on pre-Noachian tablets, and its clank of Tyrian shipmen, and scent of cedar forests.

German sympathies favour the supposition that Freemasonry really arose from the confederation of the Strasbourg stonemasons employed in building the cathedral. All that has been said in favour of this view is urged over again, lucidly; beginning with the first suggestion of the possibility made by the Abbe Guadet in 1778; though nothing is left unsaid that could be given in explanation of the statement made by some writers that the confederacy commenced at the building of Magdeburg Cathedral in 876. The claims of the eleventh century are also gone into. After the point that the word was applied to an end subsided, building operations were carried on with great energy and new life, and these drew masons together into long and close intercourses:—

"The erection of these edifices united masons, especially stonemasons, together in large numbers. As they were so long engaged upon the same building, the men were brought into very close contact; while the practice of the same art, their striving to carry out the same design, and the necessity of co-operation, facilitated their union still more, and was the cause that gradually arose from their body the fraternity of German stonemasons."

A symbolic language gradually took shape, formed of figures and ciphers, in which was framed a guide to the practice of the art. Every mason had to learn this; and no apprentice was admitted into the brotherhood who was not of sufficient capacity to be able to do so. "Mathematical axioms and geometrical figures, garbed with mystical hints, Biblical allusions and interpretations, whence the Gothic proportions were derived, and upon which they were based, with the rules prevalent in the Gothic style, formed the innermost and secret aim of the whole system."

A prominent place is given to the history of Freemasonry in England. The author says there is scarcely a doubt but that a considerable proportion of the builders of our larger edifices of the fourteenth century were Germans, and that the architects of that time were German masons. Names are given, such as Swallow, Lote, Ambler, Bald, Bryet, Brekeling, Derying, Evens, Felter, and Fabrig, are brought forward as evidence. The English masons soon followed their example in forming themselves into associations whose members recognised each other by signs, held meetings and acted in concert.

"Meetings were held regularly wherever buildings were in the course of erection. Their lodges were opened at sunrise, the master taking his station in the east, and the brethren forming a half-circle with the same building as their altar. After prayer was offered, and their wages paid to him, each craftsman had his daily work pointed out to him and received his instructions. At sunset they again assembled after supper, prayer was offered, and their wages paid to him. In stormy weather the craft assembled in a convent hall, or some other sheltered place; but in fair weather the masons' lodges were held in the open air, generally on the top of a hill, where no one could listen to their proceedings."

This is difficult to reconcile with the frequent disputes among the masons in the reign of Edward III., disclosed in the records of the corporation of London, and detail up these columns in our notice of Mr. Riley's memorials of London; which disputes the lord mayor considered arose from the circumstance that the masons were not subject to "the government of folks of their trade;" and endeavoured to settle their differences by the reception of a deposition, who were empowered to draw up a statute by which they would abide. Unless, indeed, we take it for granted that the stonemasons with whom the light masons and others quarrelled were not Freemasons, and the others were, or vice versa. The term Free-mason is not without, for the first time in this reign (1350). Although self-government appears to have been put into their hands then, it was taken out again in the reign of Henry VI., when they were forbidden to assemble. Coming down to post-reformation times, and the introduction of the Renaissance by Inigo Jones, we are told the old symbols lost their work. "Instead of the buttress,

* "The History of Freemasonry, from its Origin down to the present Day." By J. G. Fugate, Revised and Corrected by Dr. Murray Lyon. London: Asher & Co., 15, Bedford-street, Covent Garden. 1869.

plain walls with pilasters were seen; instead of the pyramids ambitiously rising towards heaven, a drooping Italian cowl was set upon the top of the little fragile tower; the tall tower pillars, which supported the arched roof of the church disappeared, and ornaments of tasteless scrolls supplied their place. Thus did German art, so honored and revered, sink to the tomb, the Fraternity on this account undergoing a mighty revolution. It is a supposition that the institution would have sunk into oblivion at this time, if it had not been for the circumstance that persons who were not operatives began to enter it as members. Hitherto only masons, stone-cutters, and carpenters were Freemasons, unless we may count the ecclesiastical and secular patrons of the craft as such; but after this time, persons of different occupations, and others following none at all, were admitted as members. It was in the year 1600 that Bosy's ancestor was chosen warden of St. Mary's Lodge, Edinburgh. In 1641, Robert Moray, quartermaster-general of the Scottish army, was made a master-mason; in 1646, Miss Aschmole was made a mason at Warrington, Lancashire; and in 1670, the earls of Cassilis and Eglington were received as Apprentices at Kilwinning. By degrees, practical knowledge was superseded by the pursuit of truth, freedom, and virtue, as the bond of union. The operative masons threw their traditions and charges to a mixed brotherhood of various ranks and creeds bent upon developing their fund of intellectual capacity and moral rectitude. Innovations crept in, "high degrees," or "high grades," grand-masters, the grand orient, and other elaborations upon the three degrees of old, apprentice, fellowcraft, and master, which introduced dissensions in different countries, and which are all related by Mr. Findel. The ever-extending brotherhood occasionally spread into the orbit of other societies, such as the Rosicrucians and Illuminati, only, however, to retreat again within its own boundaries. And although each country has its own traditions, and its own grand lodge, they have the same aim of universal peace and goodwill. Nevertheless, Freemasons find it as difficult to overcome their prejudices as ordinary mortals. We read that the American brothers could not get over their deeply-seated sense of the inferiority of coloured men; for when the coloured lodge of Boston applied to the grand lodge of Massachusetts for a constitution, at the close of the last century, it met with a refusal.

Among the documents appended is the form of an examination of a German "Stonemason," or stonemason. We pick out a few questions for extract:—

Warden.—How do we recognise a mason?

Stranger.—By his honesty.

Warden.—Where was the worshipful craft of masons in the first time instituted?

Stranger.—At the Cathedral of Magdeburg, &c.

Warden.—What was the name of the first mason?

Stranger.—Anton Hutermaier, who was the first tool was invented by Wulkan. (Perhaps corruptions of Adam-him and Tuhul-cum.)

Warden.—How many words has a mason?

Stranger.—Seven.

Warden.—What are they?

Stranger.—God bless all honesty, God bless all honorable wisdom, God bless the worshipful craft, God bless the worshipful master, God bless the worshipful warden, God bless the worshipful society, God bless all honorable promotion here, and all places on sea or land.

Warden.—What duty has a mason under thy tongue?

Stranger.—A prayerworthy Truth.

Freemasonry has come to the front lately in two distant parts of Europe. It is the Masonic lodge of Madrid that conducted the funeral of Don Enrique de Bourbon a few days ago; filling the chamber of death with Masonic symbols, and placing on the coffin, with the dead prince's sword and sash, more Masonic emblems; and drawing 600 followers. Most in spite of conventional opposition, and calling upon members to perform the moral duties with zeal and exactitude, and uphold the freedom of science and of conscience. The admission of H.R.H. the Prince of Wales has given Masonry a fresh spear in England. At the recent dinner in aid of the Boys' School, at which the Prince presided, more than £10,000 was subscribed. If modern Masons are not otherwise practical, they certainly are so in charity. Attention thus drawn to the subject, many will, doubtless, like to get some particulars of this remarkable organisation, now numbering about

300,000 members; and to these we commend Mr. Findel's book as containing much of the information they require. It is freer from nonsense and error than other attempts of the kind, but the real history of Masonry has yet to be written.

BRIGHTON, AND ITS POSSIBLE FUTURE.

To write something new about Brighton is a task not easily accomplished. "The Queen of Watling Places," as some are pleased to designate it, has been often described. Artists by the score have sketched the picturesque of its inland boundaries and outer beach; tourists have traversed its every nook and cranny, and where the guide-book compiler failed to find something worth describing, he invented a fancy scene to fill up the hiatus. Our notes in Brighton are of a current nature, and of another kind. They relate more to things that ought to exist, and to things that ought not, for the well-being of the town, and the cause of social reform and sanitary improvement.

In looking at Brighton to-day, we must, however, glance at it retrospectively as well as in the face, and judge how far, with all the acknowledged facilities it possesses, its public boards are doing their duty for improving its condition by adapting the chronic measure whereby towns are made beautiful and ornamental without ceasing to be prosperous and healthy.

Brighton is rapidly increasing in population, and of course in area. In fact, it is becoming a little London of fashion, a little sea-side metropolis of ease, to the greater city capital by the Thames. But unlike the City and other large towns, Brighton is not the creature of circumstances, which cannot be said to be perpetual. The progress and the wealth,—yes, even the existence,—of the most favoured and fashionable watering-place, rest on an unstable foundation.

During the last fifty or eighty years towns in England that promised to occupy positions like Brighton, and actually did as a resort of fashion, or as an Elysium for invalids, have been deserted, and have consequently gone into neglect and decay. We have had inland watering places, lake districts, and woody defiles in this country that have coated our fathers and grandfathers during their pleasure tour in holidays of old—places which not to have seen was considered to be the deprivation of the greatest enjoyment. Many of these favoured spots have faded, or are fading, out of sight. Notwithstanding railway communication, Bath of to-day is not the Bath when George III. was king. Nor is Tunbridge of the "Wellington," Cheltenham of the "Springs," or Leamington of the "Spas," what these once were. Some of the once fashionable resorts, even on the majestic Thames, and on our midland and northern rivers, are drying or drooping. The reason is, we are told, that the town, because fashion is capricious and exacting, and is always athirst for something fresh and new. But, exclaims the reader, what has all this digression to do with Brighton? That it is not irrelevant, perhaps we shall show before we conclude.

Brighton probably contains nearly 80,000 inhabitants, and this amount is supplemented in the visiting season by perhaps little short of two-thirds of the above number, who come as sightseers, visitors, or temporary inhabitants. This influx of humanity is accompanied with an increase of wealth and capital, and a consequent immigration Brighton, as a town, in a great measure, depends. Were the tide of fashion to veer round suddenly, we have no hesitation in saying, Brighton, "the queen of watering-places," would collapse, with its shining brilliancy, like a soap bubble. The simile, though not a graceful one, yet we venture to say, is tersely true. Brighton, in a word, is a lodging-letting and shop-keeping community. Its permanent inhabitants are a population of parasites, and the visitors are the plant it feeds upon. On this we take our stand for our survey, and from this standpoint we draw the attention of all Brightonians and Brighton reformers, corporate and auxiliary, to the question of how they can best improve the permanent well-being of their town. Of local trade and manufacture Brighton possesses little indeed, and, owing to the demand for home produce, building trades and other branches of domestic crafts; but even the trades connected with the building interest are feeling the pinch of late in the town as well as those of London, and from similar causes. Too many flock there in season, as they do to the metropolis, in quest of

labour, and the market gets overstocked. At the present moment and during the winter past there was much want and destitution in the town. The poor-house contained a good number of mechanics, and its board have been employing the surplus labour in the making of a new cemetery. We heard of two hundred hands being employed on this work, for which a pay amounted to about a shilling a day with a loaf of bread, and half according to the number of the workman's family. The Corporation of Brighton have also been obliged to relieve the distress of the unemployed in the town by putting on hands at the beach, in the construction of a new roadway or promenade under the eastern cliff. A half loaf, it is truly said, is better than no bread, and it is a commendable thing to give even a little employment, that men may not starve in the midst of plenty.

There is work, however, in Brighton that requires attention and preference for the welfare of the town, even before that of constructing promenade or beautifying the approaches to the cliff. There are a number of new streets that either require to be opened or widened at right-angles to the King's-road, or beach; and the centre of the town requires to be better opened by a few wide leading thoroughfares. Broadest of operations and lightest to carry out, the surroundings of the Old Steyne and along the Grand Parade, but let one for a moment diverge from those open thoroughfares into the narrow defiles or lanes, disguised with the name of streets, on either side, and how stand the sanitary data. We shall not complain of the break-neck character of the streets, for their incline is unavoidable; we shall only note that many of them are painfully narrow and confined, and that their outlets are not what outlets ought to be in a much-visited town like Brighton.

The stability of some of the houses is an open question, that their back-yard accommodation and drainage is a sanitary question, though also an open one, and calls for closer attention and discussion. We do not deny that the Brightonians are making, and have recently made, some efforts towards an improved system of drainage; but why stop halfway? Bad drains and noxious smells must be stamped out, like the rinderpest, if health is ever to be thoroughly established, and guaranteed to poor and rich alike.

Some few ladies in Brighton, with excellent intentions, are stirring themselves in the matter of sanitary reform; and, with that discrimination that must be added to the sex whenever they sincerely strive to be humanely useful, they are acting on the principle that prevention is better than cure. But how far are they likely to be successful? To pay a few doing visits to one or two of the worst streets, and a few disinfectants poured up, if they were perfumes, and to distribute them to the poor as one would smelling salts? A mission of this sort will not accomplish much to kill the germinating seeds of disease.

Sanitary reform is a cause in which women can render much valuable assistance. Ladies with a little money to spare, and some leisure time on their hands, can be ministering angels to God's poor. They can aid in putting fire in the family grate, food in the cupboard for the little ones, and they can help the poor wife to tide over her illness. Their visits will also help to cheer the arid, and the unemployed partner of her sorrow. A little relief and advice judiciously distributed in hard seasons works a wonderful amount of good. In whatever tends to make the poor man's home clean, healthy, cheerful, and neat, there is a true and charitable element of good. But not beyond the threshold of the home man's real labour commences; and so with corporate bodies and public boards. They hold the public health more or less in their keeping. Their negligence of the common duties, or their ignorance of the simplest principles that govern health or prolong human life may be the cause of breaching hundreds of valuable lives to premature graves.

If those in authority in Brighton wish to improve the town, socially and morally, they must be more sanitary wise; and we would also recommend to their notice, now that houses are being run up in new quarters, that the building of the roadway, and the canal thereto, are of consequence. It would be hard to describe what figure Brighton represents. Built after no well-conceived design or plan, the town, as looked upon from an elevation, is a regular jumble of houses, up hill, and down hollow. Even in the

most fashionable quarters of Brighton all uniformity is eschewed, or unattended to.

"The sea, the sea, the open sea,
The blue, the fresh, the ever free,"—

this is the great attraction; and, in the face of the broad expanse of ocean, the non-uniformity of the broadways and buildings of Brighton is forgotten.

The architecture of Brighton is not of a very high character. On and leading off the King's-road and the Marine Parade, are squares and buildings, and crescents, presenting a very prepossessing appearance, large, lofty, and well lighted; but look where you will in Brighton, right or left, due east or west, north and south, you are confronted with plaster, plaster, eternal and unredemptive plaster. Perhaps it is more the result of misfortune than fault that Brighton has developed little or nothing of stone in its street architecture. The old brick fronts that still exist without plaster coating in the town, have a more warm and genial look, and they harmonise better with one's feelings than the sickly gloss of endless and monotonous plaster.

It is not our purpose to describe the public buildings of Brighton. Its Pavilion has been painted, and photographed, and caricatured, a thousand times, and is likely to undergo the same operation again and again. In origin it was the offspring of luxurious extravagance, and wanton and epicurean eccentricity. In design it was an anomaly, and it is so still; but the notions of both architect and king harmonised, as did also their taste in this respect. Whether we call it a pagoda or a pavilion it matters but little. Its onion-bellied cupolas or domes or its turnip-root minarets can neither add a grace to architecture nor warm into life one healthy idea of improved taste. It has outgrown its use,—it is taboos as a home for royalty; but, though no longer the home of kings or regents, it contributes to the commonweal by affording useful accommodation to public institutions and public committees. In its new character, say we, let the Pagoda live so long as the public cause is served.

In speaking of the Pavilion, we may note that within its rooms the Brighton and Sussex Natural History Society have their quarters, and within the building also is the Brighton and Sussex Museum. There is a very good and varied collection of minerals and fossils here; petrefactions in stone and chalk, of fish, molluscs, and bird and animal remains—some indigenous to Sussex. The collection of stuffed birds is also pretty fair, and there are old coins, medals, and other varied castings, British and foreign.

The sanitary department is meagre and poor, and there are many things which find a local habitation here which ought to be at once ejected. There are several articles in the cases which have more the character of an advertisement for their donors and makers than that of sanitary samples of what good and bad articles are.

We are glad to see that the Brighton Society of Arts, which meets in one of the Pavilion wings, is giving facilities for the furtherance of the art-education of mechanics. The system they have adopted is capable of a wider extension, and of a more constant attention in its prosecution.

Brighton, which justly boasts of a splendid esplanade, can boast of no public park. How is this? While less noted places through the kingdom are providing parks for its people, Brighton rests on its oars at the beach. In England, Ireland, and Scotland, merchants and landlords, and members of Parliament, are moving in the good cause. Mr. Baxter gave Dundee a free park; and a few days since in Ballymore, Ireland, Sir Shafto Adair presented several acres for a free people's park. There is, indeed, a piece of private property with some villas around it which might have been secured for Brighton, but we hear it is at present down for building purposes. This park is called the Queen's Park, but there is nothing very queenly or graceful in the way in which its walks or paths are kept. Ground can be had for a public park in Brighton if its public board desire to move in the matter. Let the Brighton Corporation remember that open spaces mean health, and the health of a town bids fair for its permanent prosperity. It is considered by some that the construction of a harbour for shipping at Brighton or near it would be destructive to its visiting interest, and would have the effect of scaring visitors away, who would not care to come in contact on the

esplanades with a rough sailor or sea-faring community. Perhaps there is some degree of truth in all this. Still, we believe that a little more shipping interest than what is comprised in a few fishing-smacks or coal-brigs below the town would be a benefit to the place. With the shipping interest comes commerce, wealth, and consequent industry and enterprise.

We now get back to our starting-point; and it is for the purpose of showing that if Brighton in the future is contented to depend upon her visitors, her people and inhabitants will find they rest upon a very unstable foundation,—a foundation that will give way in course of time. It may be soon, it may be remote; but the day is certain to come. The only way to secure Brighton against future failure in this respect is for her wealthy citizens, or her enterprising ones, to originate, establish, and develop some local permanent trade and manufacture as a mainstay in hard days, should they arrive.

Corporations or municipal institutions are local parliaments, and they should be utilised for the service of the inhabitants of the different towns where they exist.

We throw out these few hints with the best good wishes for the future prosperity of the town. Brighton has many good and useful institutions. It is highly favoured as a watering-place, and its hotels and churches and house property are increasing in number. Schools, colleges, hospitals, prisons, and workhouses, however, do not constitute all the grand practical or grand ideal of a prosperous town. Laborer and employment, trade and manufacture, are required, and a good quota of a permanent working population; a fair share of growers and producers, and fewer resapers. Under the aegis of these things, towns must grow to wealth, stand firmly through occasional storms, and prosper, always independent of any adventitious aid. In conclusion, we wish to add that our observations on Brighton have a twofold character, and they are not alone intended for those whose interest is altogether wrapped up in the town, but for outsiders, here, there, and everywhere throughout the kingdom. If Brighton should be benefited, as we hope it may be, by these passing remarks, the local interest and the national one will be served together.

ARCHITECTURAL OUTLINE.

PURSUING this topic beyond the mere generalities of character of which we lately spoke,* as belonging to such an aspect of architectural design, the subject, if strictly viewed, opens out into several distinct and separately important branches of art. Scientific study. Some of these will obviously come under such heads as the adaptation of outline to locality—its adaptation to purpose—to scale—to material.

The first-named of these relations,—of form to locality,—contains in itself many points which must very materially influence architectural design; since, putting out of sight for the time the other considerations of purpose, &c., a building, otherwise correct in character, may fail in effect through oversight in this respect alone. Among the first points for thought under this section of the subject must ever be those of urban or rural situation; these again dividing themselves under the specialities of wooded or open, hilly or flat country; and closed or spacious, high or low built town sites. Without pretence to deal fully and discuss fully these distinctions, we may glance at some of them, as we deem they should weigh with one designing to satisfy them; and taking the first,—a wooded rural site,—how should this be dealt with by an architect desirous and capable of treating his work as an artist?

It may, we think, be taken as an axiom in our case that its productions should pronounce themselves as artificial by a measure of contrast with their surroundings of natural objects, while, however, harmonising, not clashing, with the latter.

The general forms projected against the sky by a mass of wood or forest are for the most part rounded and undulating; most compact and uniform in what may be considered as a wooded country, and more separated and grouped where the greater scale of its parts gives it the character of forest.

The masses of shadow and light in both will be broad, though varied, as perhaps in no description of scenery so much as in that which is wooded do the charms of richness and diversity

combine so wonderfully with those of breadth and depth of effect.

Of all painters Claude Lorraine perhaps gives most evidence of entering into the full feeling of this class of scenery, which, even without the aid of very bold, mountainous, or rocky features, comprises in its broad masses, rich undulating outlines, and deep tone of colour, many of the elements of the truly grand in landscape; something perhaps analogous to the effect of a broad, rolling expanse of dark green sea, such as Claude himself depicted in some of his nobler works.

We remember, years ago, standing high above the middle reach of Windermere, with the woods of Cumbria, North, and Rayrigg, on the eastern bank, and those above Belle Grange and the Ferry, to the west, bathed in the gay glow of a summer afternoon, long before a steamer's paddle had disturbed the placid mirror of that fair water, or a railway-whistle been heard within many leagues of Bowness, and we call to mind the profound impression of a great artist's truth to nature which led us to remark: to us, not inexperienced countrymen how like it was to Claude, how it proved the fidelity of his pictures to natural effect, and the power of that expanse of purple-green in his middle distance, which scarcely another painter besides has ventured so to dwell upon.

Few scenes in England can equal this for such an illustration; and let us ask what are the architectural accessories which would fly into their forms with those which give the outlines of the grades of near, middle, and further distance, in this instance blending into a picture of surpassing rural and sylvan beauty?

For one answer to our question we may turn to Claude Lorraine himself; for how could his pictures of such subjects produce the intense impression of unity and harmony which we so emphatically attribute to them, unless the architectural objects which enter into his compositions were of the very kind best suited to combine in effect with their natural features?

These architectural accessories we find to be generally of a massive and simple form, mostly square in outline, though sometimes circular or plan, for the most part of castellated character, and, where not so, still having much of the solidity and simplicity which belong to such structures, as is the case with many of the Italian conventual buildings. The result is a style of form which contrasts agreeably with those prevailing in woodland scenery, and thus marking man's work where occurring among nature's, and at the same time a breadth of surface and of shadow harmonising with those of the mass of woods through which the artificial forms break. To apply this to our immediate subject, we see how it points to the character which should mark, for instance, a church tower or lofty mansion in the midst of such scenery. Here all littleness of parts or fritter of detail would jar with the prevailing breadth of natural effect; and we may, not so infrequently as we might wish, prove this negatively by the mistaken styles sometimes adopted in such scenery for both ecclesiastical and secular buildings. It is often very difficult, we admit, for an architect to convince his clients of the value of plain design, even when they desire inexpensive buildings; there is a hankering after display, after a good show for the money spent, which stands in the way of simplicity of treatment, and of the clear that it is sometimes too much the case that the designer, too, especially if young in practice, is tempted to show what he can do when a good opportunity offers, rather than to exercise that due reticence of hand which is often the very soul of art, in dealing with peculiar sites.

The want also of critical knowledge among those to whose lot it falls makes choice of an architect or of a style, for some public building stands too often in the way of this discriminating exercise of our art. A case lately came within our knowledge where a most worthy clergyman about to build an additional church in his parish undertook to save the committee who consulted him any trouble in choosing an architect by his visiting several of the churches lately built in his parish, or of the style, and deciding on the point from what he should thus see. Without mentioning more than one of his comparisons, it is enough to say that he recommended for this church the architect of one which he greatly preferred to another in a parish near by, and which was a poor and weak, though once-lauded, imitation of one by the architect of the second, which was simple, massive, and impressive.

* See p. 180, ante.

qualities eminently wanting in that preferred, and whose outline, in a very prominent position, fails utterly in respect of repose and dignity, or in harmony with the natural features of its site. Our friend's new church, it is but fair to say, promises much better than that which influenced his choice of an artist. Many an old country church tower comes to mind illustrating to memory the harmony with contrast, which may exist between such scenery as we have been considering and well-adapted architecture, and not a few spires, but these all simple in their parts, and massive in their proportions even when moderate in scale; and such must ever be the qualities sought by an architect who would plant in such scenes a work of art—building "un-dissolving with the genius loci."

Our reference to Claude applying this chiefly to buildings in hilly or undulating wooded landscapes, we can scarcely leave this part of our subject without a word or two on such as are placed in flat woodland scenery. The general outline of the trees clothing a plain follows, of course, in a great degree that of the surface they spring from, and this is a source of variety and vertical form found both in the natural features, and more so is given for direct contrast with the nearly horizontal landscape skyline. Hence in such scenery forms more lofty and taper than in hilly landscape will produce appropriate effect; and it is in this kind of country that our English church spires prove most effective, and of an angle and proportion finer and sharper than would produce an equal impression among more varied natural features.

When, however, trees of the fir tribe (other than the Scotch and Italian varieties) prevail, such forms will lose their power, and the broad square tower prove much more conducive to picturesque effect.

Some of the latter, of extreme simplicity, but of good scale and grey with age, are among the most powerful accessories we know to this quiet but charming style of landscape; form, colour, and association all combining to give them value.

To pass from country to town, let us consider for a little what points as to outline should guide an architect in designing a lofty building for an urban site, spacious as to openings, but abundant in features of considerable height.

Experience shows that in town scenery, at least where the climate occasions much use of artificial heating, great irregularity and diversity of sky-line are sure to exist, and unfortunately often combined with much of weakness and inelegance, if not ugliness, of form; for rare indeed are the instances of really solid and artistic design in buildings, suggestive of the most powerful accessories we know to this quiet but charming style of landscape; form, colour, and association all combining to give them value.

Contrast with this mixed outline, by carefully graduated and distinctly marked form, should be a primary aim in such circumstances; the breaks of line not frequent, but all decisive, and care being taken to avoid in the ornamental or sculptural accessories such shapes as might approach any prevalent type of form among the familiar and undigested vertical excrecences in the neighbourhood. Breadth fully proportioned to height should be aimed at in such a situation where, perhaps, from several points complete views of the whole height of the building could be obtained, a point of less importance, where, as in crowded localities among narrow streets, this can seldom be the case, and that part of the building rising above the general mass, alone likely to impress its outline strongly on the eye. Careful study of detail is also here imperative, as, while conducing to give the general character of form relieved against the background of sky, it is certain also to be often subject to close examination, the inclination always existing where a building of importance reveals itself fully from such a distance as affords a good general view, to approach it gradually till generally lost itself in detail.

As regards the terminal forms of structures such and so placed as those now under consideration, it will be found that much of their success will depend on definiteness and decision of outline rather than on any high degree of elaboration in their parts, careful though, as above remarked, the study of those parts, however simple, must be a well-considered combination of curved and straight lines, where the style admits of it, will generally suppose in effect any form composed wholly of straight lines, and this because in almost every case this will afford the best measured degree of contrast with the forms generally prevailing in such town sites as we are supposing. Where the style of

architecture excludes any large application of curved lines, a massive squareness will generally prove most effective; and as illustrations of each of the above classes of form, we may instance as pre-eminent the cupola of St. Paul's, London, and the centre tower of York Minster. Of course, the grand scale of these examples removes them from the class of ordinary design; but the principles which they depend upon are common to all scales of building,—with this reservation, that with diminution of scale an increased proportional degree of terminal solidity should be sought, or the result may be that of flimsy weakness, such as was alluded to in a former paper on this subject, as marking some late tower designs in the provinces. At the same time a more fulsome—we do not say a more staid—style of detail should be adopted in the upper parts of the structure, thus by smallness of scale brought nearer to the eye.

One of the stateliest examples extant of simple form on a grand scale rising among town masses of ordinary buildings is presented by the tower of the church of St. Rembert, at Meehin, most beautifully depicted by David Roberts for the illustration of Lord Lytton's "Pylgrims of the Rhine," and also in Coney's well-known etching. It is remarkable that this tower, like that of York Minster, and others of very imposing appearance, has the bases of pinnacles at the parapet without their shafts, giving the idea—whether correctly or not can scarcely now be known—of their having been intended, but omitted from the completed design with the apparent object of preserving squareness and simplicity of outline, which certainly in these examples produces a noble and powerful effect.

Of town spires, those seem most effective which, with considerable massiveness of proportion, have their decoration confined in a great measure to the point of junction with the tower, as is the case with St. Mary's, Ayrton, one celebrated steeple, that of St. Nicholas, Newcastle-on-Tyne, has always appeared to us weak in its impression, save on the direct square elevation; its effect on the diagonal having to our eyes the defect we have before alluded to, of deficiency of mass in the lantern and spirelet as compared with the tower seen diagonally.

The great Somersetshire towers, as that of Tanton and others, as also the cogwheel example of Wrexham, present fine instances of appropriate urban features, and in most of them the bold treatment of their parapets and pinnacles is conducive both to loftiness of aspect and grace of terminal outline without weakness.

Wrexham Tower, though in some of its details late almost to debasement, is an especially fine example of bold proportion and artistic design, and few towers in Great Britain can boast of a finer and more appropriate central object; the spire of a lately-built chnroh, designed apparently for contrast, of a very fine angle, groups strikingly with the old tower in distant views of the town, but, on a nearer approach, especially when viewed in comparative isolation, seems too attenuated for dignity, and in its very marked simplicity in respect of detail lacks something of the force derived from clustering decorative features at the base of a spire, bringing it also somewhat more into harmony with, though not imitating, the varied and broken character of the general town skyline around it.

A critical comparison of various examples with a close scrutiny of the mental impressions they produce and their sources, fixed in the memory by careful sketching (an exercise which no number of photographs or engravings can supercede in value) will lead to much of knowledge and quick perception of what is appropriate or the contrary; and no less will such study convince of the fact we have before sought to impress, of the great scope for variety of treatment which exists for works in this class of design, notwithstanding the simplicity of the main elements entering into their composition.

Having touched, though slightly, on a few parts of our subject, such as seemed calculated to convey correct impressions of the principles of criticism involved, we may hereafter enter into a brief examination of some of the rather more detailed points of treatment affecting this important province of architectural design.

The Water-Colour Societies.—The Society of Painters in Water Colours and the Institute of Painters in Water Colours will both open their exhibitions to the public on Monday next; the private view taking place this Saturday.

THE ARCHITECT AT THE HOUSES OF PARLIAMENT.

THE correspondence between the First Commissioner of Works and Mr. E. M. Barry "respecting his duties as architect of the New Palace of Westminster," as noticed by Mr. Cowper Temple, has been published. We print a portion of the architect's last letter, which led the First Commissioner to take legal opinion as to the right of the Crown to ask for all the contract plans and drawings of the Houses of Parliament:—

"I have ascertained that the professional custom of American architects in such cases agrees with our own, and that the rules of the American Institute of Architects declare that 'drawings, as instruments of service, are the property of the architect.' I have received numerous communications from architects and others to the same effect. I have also been informed by members of my family that they will feel aggrieved if I surrender that which they consider was left in my hands as a sacred trust, and the nature and tenor of all this which I have referred to, combined with my own feelings on the subject, place an insuperable barrier between me and the right of my inheritance to the First Commissioner of her Majesty's Works. I am, however, most anxious not to offer any impediment to his views, and I am happy to show all my drawings, &c., to the Director of Works, and to make tracings for his use of any of them which he may require copies. For so doing I will make no compensation, merely asking the First Commissioner to defray the actual and necessary cost of making such tracings or copies. Moreover, whether I acquiesce in the right of the First Commissioner to give me directions respecting my own property, I am willing to give to him, without any charge, originals or tracings of all drawings and plans I have made, during my engagement, which have been signed as contract drawings, and referred to as such, and I sincerely trust that these proposals will give me and a successor standing which I greatly regret, which I am not conscious of having done anything to bring about, and to the continuation of which I am anxious to do nothing to bring about."

The proposition seems most fair. There is an entire misunderstanding abroad as to architects' plans. Mr. Ayrton is reported to have said, as we mentioned last week,—"It was correct that certain architects had resolved that they were entitled to keep plans which they had prepared for other people who had paid for them." We have pointed out on many occasions, without reference, of course, to the case, that an architect is paid not only for his drawings, but for producing a building. The drawings are his tools, his means for producing that result; and, whether numerous or few, whether made with ink on paper or with chalk on a deal board, do not regulate his charge. There is no more reason that the architect should give up his drawings to his employer at the close of the work than that the carpenter and mason should leave behind them their centres, templates, and drawing-boards, and it never is done. A plan of the drains or a section showing the flues may be and often is made for the owner, sometimes with and sometimes without extra charge; but as a principle the drawings belong to the architect, unless, indeed, there should be any special arrangements to modify this principle. We do not desire to see the Bar's common-law legal fight singlehanded with the Government, for whom law is cheap. The whole profession is concerned, and ought to make common cause to prevent the possible establishment of an unjust and injurious precedent. We sincerely hope, however, that the legal advisers of the department may take such a view of the question as may prevent what would certainly be a discreditable collision.

At a meeting of the Manchester Society of Architects, held on the 4th inst., it was resolved:—

"That the Manchester Society of Architects, being satisfied of the correctness of the views as to the ownership of architectural drawings, and desiring to see the professional practice drawn up by the Royal Institute of British Architects, desires to assure Mr. Barry that he will have their cordial support in view of the fact that the First Commissioner of her Majesty's Works to deliver up to him the drawings prepared by his late father and himself, in their capacity of architects to the Houses of Parliament."

We understand that the Society also expressed their willingness to take up the suggestion made in our last, and join in a general subscription, to fight the question on public grounds.

Sir,—Having just read the correspondence between the First Commissioner of Works and Mr. Edward Barry, it appears to me a case of extreme hardship.

During an experience of thirty years and more on some of the largest buildings in England, I cannot call to mind a solitary instance of an architect surrendering his working drawings to his client; and to my mind it becomes imperative that such a demand, now made for the first time

should, in the interests of the profession, be related to the almost.

To fight this question, which affects every architect in the kingdom, single-handed, against one of the most powerful Governments of modern times, would be a most unequal contest. Every associated body of architects should, therefore, be up and doing, and in furnishing the views of war by forming a defence fund, to which I, for one, would readily subscribe.

Let the Institute of British Architects at once appoint a treasurer, and there will be no lack of contributors to aid Mr. Barry in his defence.

A SURVEYOR.

METROPOLIS BUILDINGS AND MANAGEMENT BILL.

THE new "Bill to consolidate and amend the Building Acts relating to the metropolis; the Formation of Streets and of Sewers and Drains in the Metropolis [not very clearly expressed this, by the way], and for other purposes relating thereto," consists of 132 clauses, and 17 schedules, printed on 69 pages. It was brought in by Sir W. Tite, Mr. Bentinck, and Mr. Bowring, and is to come into operation, if so accepted, on the 30th of September next. The definition of a building not given in the present Act, stands thus:—

"Building" includes every erection comprising a cubical space defined by walls, piers, posts, or other structures, and a roof or other covering, whether such structure is wholly enclosed or not, whether it is fixed on permanent foundations or not, and of whatever materials it is constructed, and for whatever purpose it is used, or constructed, or adapted, but so that this interpretation be not construed so as to exclude from the application of the terms building as used in this Act any erection that would have been determined to be a building according to the true construction of this Act if this interpretation had not been inserted in this Act.

The fees to be paid to district surveyors are not stated, but are to be the same as for life-laws. When a building has been taken down or destroyed to the extent of one half its cubical contents, the rebuilding is to be deemed as new the erecting of a new building, but the difference of opinion which prevails as to what constitutes a cubical contents is not dealt with.

By Clause 45,—

"A building in a street may, with the permission of the Board, given by them after considering any objection made by or on behalf of the owner, be built on ground, be brought forward to any street, provided that no part thereof extends beyond a line drawn at an angle of forty-five degrees with the front wall or boundary of the adjoining building or ground; and the decision of the Board shall be final and binding on all parties and those claiming under them, as well in respect of easements of light and air as in all other respects."

As to public buildings, the Board takes much larger powers than heretofore. By clause 70,—

"A building shall not be used as a public building until the superintending architect has given his approval thereof in relation to the matters referred to in the tenth schedule."

These matters are:—

1. Width of lobbies, corridors, passages, landings, and stairs.
2. Freedom thereof from inconvenient barriers, and steps of narrow tread or curve.
3. Construction thereof with fire-resisting materials, carried by supports of fire-resisting materials.
4. Strength and security of railings and balustrades.
5. Width of openings for doors for public entrance or access and egress, and method of opening same.
6. Means of ventilation.
7. Provision for water supply by constant pressure or otherwise.
8. Provisions for extinction of fire."

By Clause 99, the district surveyor, if he find a building in an eminently dangerous state, is himself to cause it to be shored up and hoarded in.

115. By order of Council, one of the police magistrates may have exclusive execution of the duties to be performed by a magistrate under this Act confined to him.

126. A builder who executes work not in conformity with the Act is not entitled to recover payment.

As to foundations, the present requirement, that the footing of every wall shall rest on the solid ground or on concrete, remains, and is not sufficient for security. A thin layer of concrete meets the legal requirement, and if on loose or unqually solid ground, will not ensure stability. Party fence-walls exceeding 7 ft. in height are brought under supervision.

Amongst the exemptions we find,—

"Greenhouses, glass-houses, orchard-houses, summer-houses, poultry-houses, and structures for such purposes, standing detached, and not less than 10 ft. from any other building, and not being heated otherwise than with hot water, and the fire places, if any, being detached, and with no flues of any kind within the houses or buildings."

"Water closets and privies not exceeding in area 5 ft. x 6 ft. and not exceeding in height 7 ft. 6 in., measured from the level of the ground to the under side of the eaves or roof-plate, and built on separate foundations and external to the buildings to which they belong, and having no internal communication."

Buildings not exceeding in area 50 ft. x 6 ft. and not exceeding in height 7 ft. 6 in., measured from the level of the ground to the under side of the eaves or roof-plate, and not having therein any stove, fire, fireplace, boiler or hot-water pipe, or other apparatus for warming or ventilating the same."

These exemptions are very objectionable, and would fill the back yards of suburban districts with dangerous wooden structures.

We shall have opportunities to look further to the provisions of the new Bill.

The ugly coinage "storey," plural "storeys," is, we are sorry to see, adopted throughout the document.

THE LATE MR. PATERSON, OF NEW ZEALAND.

WE have to record the death of New Zealand Mr. Thomas Paterson, C.E. He was the son of a Scotch merchant, and was born about the year 1832. He received his education at the High School, Edinburgh. He was articled when young to Messrs. Grainger & Miller, in the railway branch of engineering, and at the dissolution of the partnership, Mr. Paterson remained with Mr. Miller, and finally became managing assistant to Messrs. Blyth, who succeeded to Messrs. Miller's business.

In 1863, the Otago Government required the services of an engineer, to whom they guaranteed a two years' engagement, and a salary of 1,000*l.* with expenses out and home again. Mr. Paterson obtained the post by his testimonials, without any competition. He went out by the *Suez* route, in 1863, and was first appointed as road engineer for the greater part of his engagement time. He carried out many important and successful works. He surveyed and planned the Parliamentary plan for the Dunedin and Clutha railway, and for the Southland government he supervised the completion of the Bluff and Invercargill railway. He also prepared specifications for the re-construction of the Oreti line. Mr. Paterson drew up some able and careful reports on the Lyttelton tunnel, and on railway works in general in the colony.

At the period of his death he was engaged in the preparation of plans for the Rangitikei Bridge, and as late as November last he had written to the Gladiators Board of Works that he had completed his design, and to the effect that, if a special meeting were called, he was in readiness to submit his plans, and make arrangements for the prosecution of the work.

He met his death, along with others, by the upsetting of the Dunedin mail-coach, in the Kakani river.

Mr. Paterson's loss is severely felt in the colony. He was considered to have no equal in his own peculiar line in New Zealand. The deceased gentleman was unmarried, and was not known to have any relatives in the colony. In business matters he was considered upright beyond suspicion, and he was generally respected by all who knew him, or had dealings with him professionally or otherwise.

MR. PAGE'S SCHEME FOR A CHANNEL TUNNEL.

MR. THOMAS PAGE, C.E., has read a paper to the Society of Arts on his plan for a submarine tunnel across the British Channel.

He proposes to sink, between Dover and the South Foreland, and Cape Gris-Nez (17½ miles apart), eight conical wrought-iron shafts, the longest about the height of Westminster Abbey towers; three shafts to be two miles apart, and consisting of an inner and an outer casing, the space between to be filled in with concrete after they are sunk and fixed or imbedded. Four embankments also round with concrete to a height of 50 ft. on a base of 45 ft. all round. A network of moored chain cables would also help to secure them. Light-houses would be placed on the tops of these shafts, at a height of 180 ft. above low-water mark.

"The shafts being in place, the bed of the sea would be brought to the surface by the operation of divers, who would be enabled to work without pressure on their lungs or their bodies; but into the particulars of this system arrangement for such purposes of operations in deep water."

The next operation is that of sinking and bedding on the bed of the Channel, the tubes or construction for the

railways. These may be for a single line or a double line. I will refer to the double line at present, and then describe a tube, the joint of which is patented by Mr. Williams, of Liverpool, by means of which the shafts, meeting at the joints, can take an elevation position, and all the junctions can be made above the surface of the water, while the remainder of the tube is bedded in the sea.

The space between the shafts being divided into lengths, say of a quarter of a mile each, and heavy iron frames fixed in the bed of the Channel by the divers, the lengths of tubular sections which I would propose to submerge at one time are 1,000 ft. in length, making the whole length of the Channel Bridge. Eight of these lengths being sunk, and covered, complete the distance of two miles, and if a sufficient number of a sufficient number of operators were provided to commence from each shaft, the whole between two shafts would be done in half the time; and it is equally certain that the same time could be done by operators would complete the whole distance between Dover and Cape Gris-Nez in the same time as would be required for joining the sea.

The gigantic nature of the work and the magnitude of its details require corresponding means of execution, both in the position, and for embedding the lengths of tube in their proper places in the bed of the Channel, as well as for all the operations for filling the spaces between the outer and inner rings of the shafts with concrete, in forming the beds of concrete round the shafts, and in covering with concrete the submerged tubes immediately they are placed in position. It is by an excess of power and means, in steamships, in cranes, in the use of the best materials for forming concrete, that the progress and completion of the work can be accomplished with rapidity and economy. Thus to sink a quarter of a mile, or a half, or a mile, in two hours of the tide, would require 1,500 men; to fill the space between the rings of each conical shaft, and to cover the tubes with concrete, would require 500 men for the same time.

The cost seems to have been estimated at 8,000,000*l.* Mr. Page's plan is based on the fact that he has devised on an understanding with Mr. Newmann, of the firm of Freshfield & Newmann, that if he could stake his professional reputation on a plan that could be completed for 8,000,000*l.*, there would be no difficulty in providing the funds for its execution.

In the discussion which followed the reading of the paper, opinions were expressed pro and con, as to the practicability of the scheme. Mr. Brassey was amongst the speakers. He said that so far as he had been able to understand the project, it was one of such a gigantic and exceptional character as he had never before heard proposed. No engineer could ever attempt anything of the kind, and he very much doubted whether it would succeed; his impression was that it would not. He did not think it was possible to sink the tube, as was proposed, to the depth of some 200 ft. by any means yet known; it was a question of doing so against all the greater experience would be a very hazardous experiment, to say the least of it. He agreed with Mr. Bateman (who had previously spoken) that it was impossible for miners to work at a depth of 200 ft. Therefore, with no experience to guide them, he thought it was a bold matter to attempt to construct such a project, and no wise man would attempt it.

Mr. Page said Mr. Brassey's objection as to divers working 200 ft. below the sea, without and pressure upon their lungs and bodies, was very easily answered. Supposing the room in which they were was at the bottom of the sea, and the walls were carried up above high water, would any one dispute that they could send out a diver from that room into the sea, passing through a sort of valve-embankment into the sea, and give him only the atmospheric pressure, with perhaps a pond or so more.

He had devised a device in the purpose of which all pressure was removed from the body. That being explained, all the difficulty about divers operating in deep water was removed. As to want of experience, all great engineering feats had been carried out without previous experience.

THE TRADES MOVEMENT.

Manchester.—Some months ago the painters of Manchester gave notice that on the 1st of April they would come work unless an advance of 1*d.* an hour was given by their employers, along with a reduction in the hours of labour of three hours and a half per week. The men and their employers each agreed to select six of their number to form a committee of arbitration, to try the whole subject before the Mayor of Manchester, and the appointed umpire. His worship has been hearing both parties, but as the case has sided, it appeared from the admissions on both sides, that every four years there was a proportionate rise in the wages paid to the men, and he thought that, under the circumstances, the masters should pay the 7*d.* per hour, and accede to the demand for a reduction of three hours and a half per week. This was in fact, given to the men an extra 1*d.* per hour, with the reduction

demand in the hours of labour. Mr. Harwood, one of the principal employers in the trade in Manchester, in proposing a vote of thanks to the mayor, stated that it would be a great loss to the masters to give the advance at the present time, but it was preferable to coming into collision with the men, and creating misunderstanding and contention. He hoped that the men would, by increased diligence and attention to their work, in some respect qualify the great loss which they must inevitably sustain.

Motherwell (Glasgow).—A large number of labourers in the employment of Mr. Smith Brown, contractor, have turned out on strike for an advance of wages. The men allege that although other branches in connexion with the trade have received an advance, they have obtained none; hence the dispute. The strike at present is only partial.

Stirling.—The operative masons in Stirling have struck work, in consequence of the employers having refused to give an advance of four pence per day of work. The strike will continue, and upwards of 100 masons, with a considerably greater number of labourers, are out of employment. The masters have resolved to assist each other as far as possible, and, by the aid of their apprentices, are endeavouring to push forward the work upon such buildings as are most urgently required.

Frick.—A meeting of the master masons has been held, and it has been unanimously resolved not to comply with the demand of the operatives for the additional 4d. per hour. A good number of men are coming from the country districts and obtaining work at the present rate of wages, —viz., 54d. per hour. The men connected with the Masons' Association continue to hold out. Seventy-seven have found employment in other parts, but thirty-two are still idle in the town.

Cotbridge.—The joiners of Cotbridge and neighbourhood have lately evinced considerable dissatisfaction since the commencement of the strike at Glasgow, and every effort has been made by them not only to support their city brethren, but to obtain the terms for which they are agitating. Weekly meetings have been held to consider the question, and it has been decided that, unless the masters agree to the terms proposed by the Glasgow men on strike, they shall also turn out. Accordingly, no agreement having been come to, the men have ceased working.

Fatal Trade Dispute in Bohemia.—The Austrian journals give some imperfect details of a lamentable collision between the Imperial troops and a body of workmen on strike. It appears that the trade differences in Northern Bohemia have lately resulted in the now ordinary form of a strike on the part of the discontented workmen. On the 31st of March the artisans employed at several manufactories at Reichenberg, having ceased to work, proceeded in a body to some establishments at Szwab, with the object of compelling a cessation of labour in that town. On their arrival they found the principal manufactory occupied by the troops, and a conflict ensued, which, unhappily, terminated in loss of life. It is stated that the workmen on arriving proceeded to insult the soldiers and to pelt them with stones. The latter after a time became exasperated, and fired upon the crowd. The result was five men were killed and twenty-five or thirty were more or less seriously wounded, whereupon the workmen dispersed; threatening, however, to return in greater numbers and better prepared to exact vengeance. One soldier was killed and another seriously wounded by stones. Great agitation prevails throughout the northern part of Bohemia, and all the manufactories of Szwab have been closed, while reinforcements of troops are being sent from Prague.

THE GREATNESS OF GREAT MEN.

RECENTLY an excellent lecture on this subject was delivered, in Wakefield, by Mr. Walter Smith, the head-master of the Leeds, Bradford, and Wakefield Schools of Art. In the course of his remarks he said he considered that in all great men there were three features,—love of work, unflinching courage, and perseverance, and some men not been the greatest workers the world would never have known them as great men. Mr. Smith, in answering the question "What is the secret of the success of great men?" said:—"The secret of great men is that there is no secret at all, and this is a secret which, though proclaimed upon the house-tops before

multitudes of hearers, will always be believed to be a secret, and for no better reason than that it is the easiest and most plausible way of explaining the difference that we see to exist between ourselves and those we acknowledge to be great. If we would fairly and honestly take to the acknowledgment that whilst we have slept great men have worked, whilst we have been self-indulgent and prone to luxury, they have been self-denying and toiled to hardships, we should lose something in the good opinion we have of ourselves, but we should gain a great deal in self-knowledge, and dispel a mystery that should be no mystery at all. There seem to be common elements of character in all great men, almost the identical basis of character in the one as in the other, the different vocations explaining any minor differences that are to be found in them. Thus I find precisely the same features in the character of Michelangelo and the Duke of Wellington, two men living three centuries apart, in different countries, one a great artist and the other a great warrior. In them, as in every instance I have yet studied, the distinguishing features is an intense love of work, of the kind that fell to the lot of each to do. Another feature is indomitable courage, and the last is a never-fading perseverance. Though I have carefully studied the histories of many of the greatest men, in order, if I could, to discover the source of their greatness, I have never yet come upon one great life that has lacked these three features,—love of work, unflinching courage, and perseverance.

And this leads me to express the opinion that the only reliable sign or indication of genius is eagerness for and love of work as a basis; and whether this genius will ever become developed to maturity will depend greatly upon the other two features, courage and perseverance; though, of course, the latter depends upon the former. Another feature of great men was, that failure did not discourage them. If they sat down with fearful eyes and lamentations, surrounded by their mistakes, and overwhelmed by them, they would never rise over them. Greatness persevered and overcame, whilst littleness lost heart and failed." As an illustration of perseverance the lecturer instanced the case of George Stephenson, who succeeded, in the face of apparently insurmountable obstacles, in laying a railway over Chat Moss, between Manchester and Liverpool. That which at first sight was deemed impossible to achieve was afterwards declared the strongest, and safest, and cheapest part of the line. Other men would have abandoned the project, but George Stephenson was a great man, and he did not. The lecturer conceived that in one single injunction, "Whatever thy hand findeth to do, do it with thy might," lay the elements of success. "It is not," said he, "the nature of your work, nor the importance, socially or pecuniarily, of your trade or profession that will give you the opportunity or means of living a great or noble life; for there are models in every calling, however important, and nobles in every occupation, however insignificant. The man dignifies or degrades the office, the office does neither to the man. There is absolutely no employment which may not be made the means of arriving at success in life; there is none which cannot be degraded into failure. The only stipulation is, that your hands shall have found the work to do, and that it shall come with your might. Not with your inclination, but with your faith; not with a half-hearted heart, but with might; and might means strength of hand and strength of heart, skill and courage combined in one strong word."

LECTURE BY SIR H. JAMES ON THE GREAT PYRAMID.

A LECTURE on the Great Pyramid of Egypt has been delivered before the members of the Hartley Institution, at Southampton, by Col. Sir Henry James, R.E., director-general of the Ordnance Survey. Sir Henry entered at some length into the details of measurement of the Great Pyramid, pointing out its perfect exactness, and said that many enthusiastic gentlemen imagined these beautiful proportions must have been the result of superhuman labour, following out this idea in a manner which excited the admiration of those who were their followers, and the ridicule of those who were not; among the latter of whom he included himself. In passing, the lecturer exhibited an exact representation of what he said was the most interesting piece of wood in her Majesty's dominions—the wooden

ombit measure found in Egypt, and now deposited in the British Museum, and which was more than 3,200 years old. Having remarked that he had a copy of this measure sent out to Egypt to Sergeant-Major Macdonald, with instructions to measure the pyramid, and stated one or two of the results thereof, Sir Henry went on to say that the side of the square base of the pyramid was equal in length to 760 English feet, and his experience was that people had a very imperfect idea—a difficulty of realising such dimensions. The stone used for the facing was of a better class than that which formed the inner portion of the building, and to give an idea of the recklessness of cost, so to speak, and the tremendous indifference to any amount of labour which characterized the old Egyptian kings, the lecturer said they, at enormous pains, had large stones brought from the opposite side of the Nile, and placed in their present positions. They were, too, very clever as architects; for instance, in the king's chamber inside the pyramid there were stones 30 ft. long, placed one over another; these stones were not found in Lower Egypt at all; but although some were 90 tons in weight, they were brought in vessels 500 miles down the Nile, carried across great causeways, and then placed in the pyramid 100 ft. above the level of the ground. Then, again, as to the finish, this Syenite stone was one of the very hardest known, and yet it had been polished and built in to form a casing for the king's chamber with such an exact skill and so high a finish, that the finest piece of tawny paper could not be put between the joints, and this in a place built 4,000 years ago for no other purpose than to hold the body of one man. If there was one thing which more than another he admired in the construction of these pyramids it was the extraordinary care and skill with which the builders introduced the principle of counterbalancing, by which, he believed, the stones were raised to their positions. By aid of a model, the handiwork of Corporal Goodwin, R.E., who worked it on the platform, Sir Henry explained his theory upon this point. In conclusion, he said that the assertion of some that the pyramids were built by the aid of magic, or of measure was an insult to the understanding.

THE NINE HOURS MOVEMENT.

BY A WORKMAN.

SIR,—Another agitation in the building trade is the last ominous announcement which has been the round of the papers. Among the many strange things in existence there is none more startling than the continual agitation of the builders' workers' commitment to them is unknown,—and in season and out of season the brains of the leaders are achieving agitations. It matters not what is the state of trade. When brick they want a rise of wages; if slack, a reduction in the hours of labour.

According to the reports, the new movement is making great progress. Meetings are held, at which every one agrees, and the rules for the guidance are unanimously passed as the apex of legislative wisdom. It is a pity that any doubts or jars as to the benefits of the movement should disturb such rare harmony. Nevertheless, I think it is the workmen's duty to weigh their unanimous proceedings in the scale of common sense, and, if found wanting, to expose the fallacies which have misled a portion of their fellow-workmen. Before doing it, I may state that I have spoken to many workmen about the movement, and have not found any in favour of it. The labourers are tooth and nail against it; and the others say, that as the building trade is better paid, has more privileges, and work less hours than other trades, it is the wisest course to let well alone.

The movement in 1869 for a reduction in the hours of labour led to one of the greatest strikes on record. The revivers of that movement have changed their tactics, and state they are willing to drop the hour's pay, and take nine hours' pay for nine hours' work, thereby assuming that no opposition will this time be offered by the employers, as the object is to provide for the surplus hands in the trade, and the leaders think they are entitled to much praise for their philanthropic efforts. But it no happens that there is something further in the shape of a code of working rules which gives the key to the movement, and from them we learn that the reduction of the hours of labour is the pretence,—higher wages, more privileges, the object; and it is evident that the masters must, in the inte-

rest of the public, resist, or this movement will, like many others, end, if not at once opposed by masters and workmen, in a ruinous strike. As such is the case, it behoves employers and workmen who object to the movement, and to those continual agitations in the streets, to arm themselves and form, not an anti-strike or a free labour society, but a common-sense society, whose object would be to expose the fallacies and inconsistent considerations of the men who now pretend to lead and regulate the building trade. The reduction of the hours of labour is a favourite theme with the trade unionists; they have an idea they can, by reducing the hours of labour, regulate the supply to the demand; they appear to think that work is a fixed quantity, and that workmen are an exact number. But, unfortunately for their theory, London is the metropolis of Great Britain, and workmen from all parts flock to it; and, further, it is the ambition of a large number of apprentices, to become London workmen. They have heard of it as a place where enormous wages are to be earned, and thus it is that in London there is, and always will be, a large number of unemployed workmen. As this demand to raise wages, it is already much higher than the wages in other trades, will end disastrously to all concerned, in the first place, by the absorption of workmen whose trades are closely connected; and in the end they will be compelled to accept lower terms and less privileges than they previously possessed.

The rule relating to working hours states "that nine hours are to be reckoned as the working time; all over that to be called overtime, and to be paid time and half, and double time." Before discussing the consequences of that, I might ask, who new objects to overtime? I have worked with unionists, and I never heard any object. We know that in theory they pretend to object, but in practice they take to it kindly without a protest, and therefore this nine-hour movement is a dishonest movement, because it is in its essence a scheme to raise wages. It is, or ought to be, well known that a large part of the builders' work in London consists of alterations and repairs, and it is that branch of the trade which the rule as to overtime would most affect, and its influence would have a deadening effect in relation to the various trading establishments in the metropolis. As this demand for extra inches of space is economised, and all sorts of schemes are devised to make the most of it; and alterations and repairs are a serious consideration, as it is a partial stoppage of business, and the tradesman is always glad to see the backs of the builder's workmen; and no doubt in the first-class businesses the inconvenience of having workmen about is almost as great a consideration as the cost. Overtime is then a matter of necessity, and if they are to be taxed from 50 to 75 per cent. for it, the chances are they will prefer to go on in their old way rather than submit to the workmen's demands. Other cases might be cited which would more illustrate this abortive movement, but sufficient on this point has been said to show that, in relation to alterations and repairs, it would inflict loss on the public and seriously affect the workmen's earnings.

In London there is a large number of small builders who employ from two to twenty workmen, and these in most cases have not more shop-room than they require to carry on their usual business. It sometimes happens that they are unusually busy; every bench is full, and they require the men to work overtime; but if they are to pay a heavy tax for it, it is evident that it would prevent any increase or enlargement of their business; and thus the rule would keep small tradesmen in a fixed position, and give an advantage to those who happened to have more shop-room than they actually required. As some builders are more fortunate than others,—or, in other words, there is a surplus of master builders,—it would be well for the leaders of the movement to make it more absurd than it at present is, to take into their consideration the case of the unemployed masters, as there are at present many of them who have no storerooms, and no extra work room, whilst there are others with a plenty of shop-room and no work. According to our leaders' idea this state of things ought not to exist. I hope, sir, you will allow, in the interest of the workmen, this question to be discussed in the *Builder*, as, in my opinion, that is what is required to bring the workmen to a common sense and practical view of the unwise proceedings of the so-called working-class leaders.

JACK PLANE.

THE POOR OF EDINBURGH.

Sir.—You have frequently, in the pages of the *Builder*, called attention to the subject of the destitution existing in the metropolis, and it has occurred to me to bring under your notice the "Edinburgh Association for Improving the Condition of the Poor."

The Association has been in existence for two years, and after having had many obstacles to contend with, is now in good working order, and is doing much good. This is a favourable case for such an experiment. The poor are more concentrated in certain districts than is generally the case, and these are not far removed from the residences of the better classes. There are here a number of retired military and professional men, with time hanging on their hands, and whom the work of visiting, &c., is not burdensome, but the visitors are recruited from all of the well-to-do classes who have any time to spare; and some of the most energetic and useful of them belong to the class of skilled artisans. The Association is particularly anxious to get at the children, where possible they are sent to school, and free dinners have been given to many of them (all are invited). Members of the Association attend these dinner-parties, and a register is kept of the guests, and their cases inquired into. By this means we get at the root of the evil.

If your making public this matter you may induce others to follow a good example. I believe that applications have been made to the central committee from other cities for information as to the working of the system.

W. G. SHELLS.

WORCESTER DIOCESAN ARCHITECTURAL SOCIETY.

The annual meeting of this society has been held in the Council-room of the Museum of the Natural History Society, Foregate-street, Worcester; present,—Earl Beauchamp (in the chair), Rev. H. Catley, Rev. G. S. Mann, Hon. and Rev. H. Douglas, Rev. T. G. Cortler, Rev. H. J. Vernon (Eokington), Rev. H. G. Faunesset, Rev. J. F. Green, Rev. E. H. Eyrre Davies, Mr. E. Lowe, Mr. J. Severn Walker, and Mr. G. J. A. Walker.

The Secretary (Mr. Severn Walker) read the annual report, which was adopted; after which some discussion took place as to the right and duty of the society to criticise the various public buildings erected in the locality during the past year.

The Rev. M. E. C. Walcott was elected an honorary member of the society, and the office bearers were re-elected.

THE ARCHITECT'S DEPARTMENT, BOARD OF WORKS.

The preparation of the New Buildings Bill, to which we have referred in our present issue, as well as that of various previous drafts, devolved on Mr. Walter Newall, the principal clerk in the Architect's Department. After 25 years' service, partly with the Beaufores of the 1844 Act, and since then under the present Board, from its foundation, Mr. Newall finds himself with a salary of 300*l.* a year, attained at the beginning of 1868 by the final increment of 10*l.* under the first-class scale, and we do not wonder to hear that he is now seeking to induce the Board to consider his position. We have reason to know that his duties are such as have always required knowledge and judgment, and have long called for nightwork, week by week, in the preparation of returns and reports which could not be attended to during office hours. A public servant in such a position should not be allowed to end his days at 300*l.* a year.

THE GREAT HALL, ALEY'S COLLEGE, DULWICH.

This handsome apartment forms the central feature of the block of buildings just completed, as the new College at Dulwich, of which a general view, plan, and particulars were given in a previous volume of the *Builder*.^{*} The whole of those buildings are now complete, and have been partially in the occupation of the school, where 250 to 300 boys are at present assembled. The

building, when fully occupied, has accommodation for 800, and situated as it is close to London, and in the midst of a very populous neighbourhood, which is ever on the increase, there can be no doubt that the full number of scholars will wish to occupy the rooms as soon as the arrangements of the trustees permit. At present, as we have said, they do not propose to take more than 300 boys.

The hall is on the principal floor of the building, and is approached on each side from the ground floor by spacious staircases communicating with the principal entrance of the house, and which connect the north and south wings of the building with the central block. Its length is 92 ft., its width 43 ft., and its height above 50 ft. There is a raised dais at the eastern end, which will be available, we presume, for those speeches and dramatic exhibitions which so agreeably marked the examination prize-days of Ailey's College during the last few years. The great ribs of the roof are supported on pillars of red Devonshire marble, highly polished, with richly-carved stone capitals, and standing on pedestals of terra-cotta work in cream colour. The light is admitted by means of a large glass and iron lantern, the work of Mr. Blashfield, of Stamford. A paneled oak dado runs all round the hall between these pedestals, while the panels between the pillars are to be gradually filled with the recorded names of scholars of Ailey's College, whose names shall have attained distinction in their after-studies and their future lives. The great doors each side of the hall leading to the staircase, of carved oak, are worthy of observation. The hall is lighted by a large multi-paned window at each end, as seen in our engraving, and which is filled with glass, relieved by a stained glass bordering; while the tracery contains the armorial bearings of the College. These windows have been executed by Mr. Moore, of the Eckford Glass Works, Clerkenwell, and the border and other coloured parts are formed from Stamford coloured glass, the ingenious process for doing which has been patented by Mr. Moore. The window jambs, mullions, and tracery are all of terra-cotta, enriched with modelled carving from Mr. Blashfield's manufactory above mentioned. The roof of the hall is entirely in deal. Its design is similar in style to the roofs of some of the great churches in London; while in Italy—that is, a wagon form; sometimes found with a single curvature from wall to wall, and sometimes, as at the great church of St. Fermo, at Verona, of several stages of curvature,—an idea which has been carried out at Dulwich. These roofs in Italy, however, are never divided into bays, as at Dulwich, and the result is a heaviness of effect which is here relieved by the circular principals springing from hammer beams supported on the marble pillars before referred to. The spandrels of the springers under the hammer-beams are filled with the armorial bearings of the College, duly emblazoned in colour, and the effect of the whole is enhanced by the simple expedient of staining its principal lines of moldings, but leaving the natural colour of the deal in the carved or enriched features; and the whole then being varnished. From the centre of the roof rises a lantern about 30 ft. above the ridge of the roof, intended for ventilation, which, being treated externally in several stages, and terminating with a crocketed spire, forms an important and graceful feature of the exterior.

This hall is intended to be used for dining the masters and the boys of the College who may wish to avail themselves of the arrangements about to be made by the trustees for this purpose, and with a view to which a complete range of kitchens, &c., is provided on the lower floor, with a double lift thence to the service-room on one side of the hall. It is calculated that about 400 persons will be seated in the hall, though it is doubtful whether so many scholars will wish to do so, as, of course, many live with their relatives in close proximity to the College. On the annual prize days, 700 to 800 spectators will readily be accommodated, a fact which will encourage and reward the exertions which doubtless will be made to visit these occasions with Westminster, Eton, Harrow, Rugby, and Marlborough.

We should not omit that the walls and roof have been tastefully decorated in colour and arabesque, by Mr. Schmidt, of Kingesdown-road, Kingston, and the designs and drawings were submitted to the governors, Mr. Charles Barry, from whose designs the whole pile of buildings has been carried out.

* Vol. XLVI., pp. 521, 521.

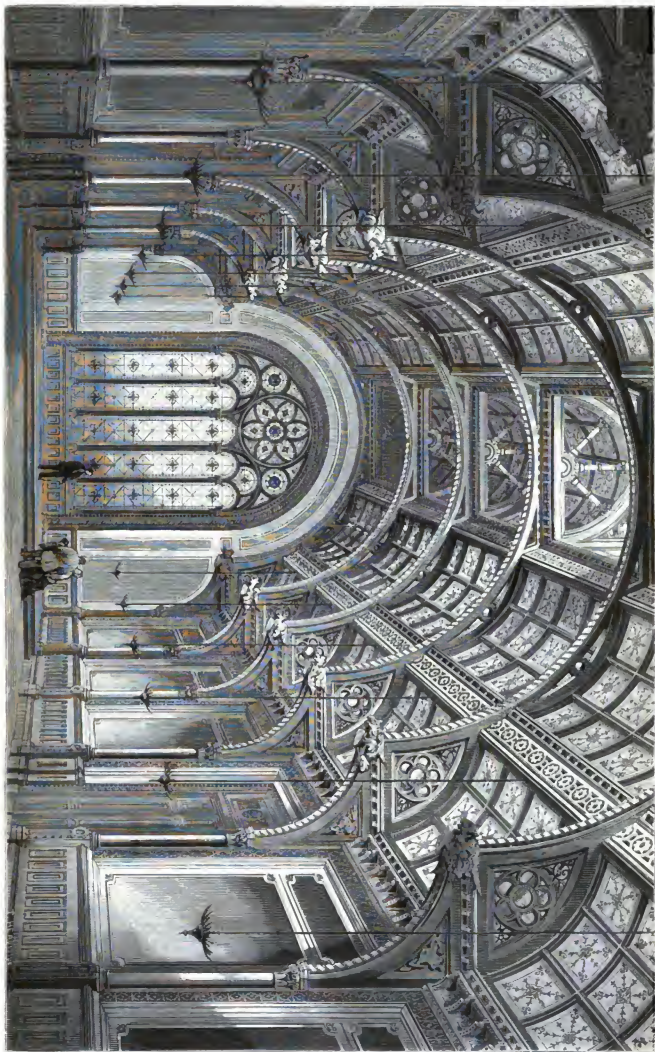


MR. CHARLES B. VIGNOLES, F.R.S., *President of the
Institution of Civil Engineers.*



ANCIENT TEMPLE AT EUYUK.

DULWICH COLLEGE: INTERIOR OF THE GREAT HALL.—M^r. CHARLES BARRY, ARCHITECT.



and varying from four to seven stories in height. The death-rate on the average would be less than 22 per thousand. Baille Salmon cannot have made himself at all acquainted with the details of the subject when he speaks of the buildings erected by the Corporation of London and by the Peabody Trustees in the same category. If he had examined the principles of construction in each case he would have seen at a glance that they were entirely opposed to each other, the Corporation having adopted my plan of external staircases and perfect external separate ventilation to each tenement, while the Peabody Trustees have invariably followed the old plan of internal corridors, with the necessary consequence of internal ventilation and increased difficulty in the prevalence of the spread of epidemic disease. In my houses the tenements consist alternately of two rooms and a scullery, water-closet, &c., to each family, and averaging the family at five souls, the cubic space for each soul would be about 480 ft. Baille Salmon's objection to six stories seems to me quite ridiculous, especially in the face of the fact that in my buildings the highest stories (even the seventh) are the most healthy, and let the best. Give me good and sufficient drainage, and a plentiful supply of water at the top of the house, as we have in London, and then the higher the better the thorough ventilation and the more healthy the tenement. Suburban villages have been tried in the neighbourhood of London and have failed. Mr. M'Adam is quite right in his working plan will not be in them; they prefer, and almost necessarily, their crowded localities, where work for themselves and their children is more readily obtained, and where their amusements are close at hand. Dr. Ferguson is also right when he says that the great thing is to get rid of the foul air in houses. This can only be done by the most judiciously adopting the external staircases, and providing proper and sufficient drainage, well-trapped at basement, and with upcast ventilating pipes from lowest zephyr. The working classes in Glasgow are housed much worse than in any city I have ever seen in Great Britain or on the Continent, and it becomes the more readily amenable to look to it ere great mischief arises."

CHURCH-BUILDING NEWS.

Watstead Ho, near Bideford, Devon.—The new church of Holy Trinity for this increasing warren-place, has been opened by the Bishop of Exeter. It has been erected by the Rev. J. H. Gosset, vicar of Northam, and stands as a Chapel of Ease to that parish. It is built in the Early Pointed style, in plan consists of a nave, 60 ft. by 20 ft.; chancel, 32 ft. by 18 ft. chancel aisle, 19 ft. by 9 ft.; north and south aisle, 60 ft. by 9 ft.; organ chamber, 10 ft. by 9 ft.; vestry on north side of chancel, south porch, and western narthex, 20 ft. by 7 ft.; the height from nave floor to ridge of roof being 40 ft. Strength and solidity have been the aim of the architect. The external dressings are of Lundy Isle granite, except where Marwood and Forest-of-Dean stone has been used for contrast in colour. There is a bell turret, 18 ft. high, with two bells over the chancel arch. The dressings of the interior are of Bath stone, and the plaster is finished deep red. The nave roof is of deal, and that over the chancel pitch pine. The stone for facing all the plain masonry of the exterior was taken from the Kenworthy Quarries. The floor of the chancel is laid with encaustic tiles, supplied by Mr. William Watstead, of Goolishaw, the foundations rest on a bed of concrete, 4 ft. wide and 3 ft. deep, and in some cases 8 ft. below the surface. All the works have been completed by Mr. J. C. Tremear, builder, Bideford, from the plans and under the superintendence of the architect, Mr. W. G. Oliver, of Barnstaple. The carving was executed by Messrs. H. Hemm. The cost of the works will be about 1,700*l.*, exclusive of boundary walls, excavations, and fittings. The nave will seat about 400 persons.

Otterton, Devon.—Lady Rolle is rebuilding, at her own expense, the ancient parish church of St. Michael, Otterton. In taking down the chancel the workmen found a staircase leading originally, it is supposed, to the rood-loft. In the main the plan of the church has not been altered. The tower will still stand at the east end of the south aisle, but the chancel will be carried out further eastward, so that it will project beyond the aisle, and a north aisle will be added to correspond with that on the south side. Greater length will also be given to the west-

end, and thus the church will be made to accommodate 700 people. The style will be Early Geometrical, which will carry the work back in association with the only period when such irregularities occurred as the eccentric position of the old tower. The nave and the two aisles will be covered by separate span roofs springing from solid walls, and the chancel, which may be regarded as an addition to the form of the old building, will be proportioned to the increased breadth and length of the structure. There will be south and north entrance porches, but no door at the west end. The north transept will be reached by a flight of steps, which may be needed necessary by the fall of the land on that side. The old tower remains; at least, the lower part, having been rebuilt above the belfry windows, and surmounted by a parapet with quarterfoil piercings. The roofs will be tiled. The walls will be of Berryshead stone, the windows, and all external dressings, of Ham Hill, and the interior arches of Bath stone; while the walls internally will be lined with Beere stone, and the columns made of Plymouth marble. The roofs of nave and aisles will be of stained deal, and the chancel fittings of oak, while the roof of the church will be stained with oak deal benches. The ancient font will be retained. The capitals of the polished marble columns will be of Caen stone, of large size, and finely carved, and the chancel steps will be of Plymouth marble, like the piers, while the floor will be paved with Maw's encaustic tiles of rich design. The architect, Mr. B. Ferrey, and the builder, Mr. Burridge, of Exmouth. The carving and sculptured work will be executed by Mr. Harry Fleas, of Exeter. The total cost of the building will exceed 7,000*l.* Service will be held meanwhile in the adjoining schoolrooms, which, like the church, are the gift of Lady Rolle to the parish. The church has already been finished from Mr. Ferrey's designs. Mr. Clontman is the clerk of works.

Folkstone.—Considerable alterations to the Church of St. Peter will be proceeded with immediately after Easter. The principal works will consist of a new north aisle, the enlargement of north transept and sacristy, and the extension and improvement of the sanctuary, which will have an apical termination, with windows of stained glass, and be separated from the nave by a low screen wall. The present roof is to be raised bodily an extra height of 5 ft., and at the intersection of the roofs of the nave and transept will be erected an oak octagonal fleche finished with a leaded circular spire. All the present benches are to be altered by reducing the height of seat and back, and the new seats will be low, movable light benches. Externally, the roof of the Kenilworth Chapel, a two-story ground stone dressings. The walls on the inside will be of red and blue bricks, and the columns and arches to the arcade, &c., will be of Caen stone. The work will be executed by Mr. Bowley, from the plans and under the direction of Mr. S. Slingby Stalwood, of Folkstone, architect.

Derby.—The corner stone of St. Luke's Church, Derby, which is being erected as a special local memorial of the late bishop of the diocese, Bishop Louisa, has been laid. It is being built in a rapidly increasing suburb of Derby, on the new Uttoxeter road, called California. The plans were prepared by Messrs. Horwood, Robinson, of Derby, architects; and the contract was taken by Mr. J. Fryer, of the same place. The walls have been raised to the level of the ground-floor. The new church consists of a nave, which, with the porch at the west end, is 94 ft. 6 in. long, and 52 ft. 6 in. wide; a chancel, terminated by an octagonal spire, 37 ft. by 21 ft.; two narrow side aisles to the nave, 3 ft. 6 in. wide in the clear; and a tower at the north-west angle, 21 ft. 6 in. square, and 120 ft. high to the top of the roof. Under the chancel, which is considerably above the level of the adjacent street, there will be a large room for vestry and other meetings, and over a chamber devoted to a heating apparatus, on the south side of the chancel, are vestries. The vestry is lighted with ten lancet windows, one on each face of the apse, and the others in the side walls. In the west end a rose-window will be placed, 14 ft. 6 in. in diameter. The walls and dressings are of stone, from Riggelaine quarries, at Little Eaton, near Derby. It is rock-faced on the exterior, and the interior is dressed ashlar. The roof, which will be of deal, stained and varnished, with circular tracery, will be covered with brown and blue Staffordshire tiles, and is intended to pave the aisles with Milton's tiles. The interior of the church will be fitted with open deal seats,

stained and varnished; and accommodation will be provided for 650. The whole of the seats will be free.

Hartford.—St. Andrew's Church has been consecrated. The style is Geometrical Pointed. The church consists of a nave, 78 ft. long, 25 ft. wide, and 47 ft. high, to the apex of the boarded vaulting, with aisles and transepts, a vestry, organ chamber (12 ft. 6 in. by 16 ft. 6 in.), and, on the north side of chancel, and the vestry, which is on the south side, is of the same dimensions. The total length of the church, including the old tower, is 122 ft. The width across the transepts is 75 ft. 6 in., across the aisle, 49 ft. 6 in. The area of the old church, exclusive of tower and porch, was 3,308 ft., including walls, and the area of the new church is 6,262 ft., or nearly double that of the old. The church is faced externally with knapped flints, random work, the dressings being of Bath stone. The windows to the aisles (above each bay) are of tracery and light. The clerestory windows are of two lights, with plate tracery. The transept ends are designed so as to form important features—the church being seen more in elevation than perspective. The transept rose-windows, which are filled with geometrical tracery, are 10 ft. 6 in. diameter, and below them are two lancet light windows. The roofs of the church are covered with red tile, with ornamental cresting. The old tower has not been pulled down, the funds not justifying an attempt to rebuild it. Accommodation is provided for nearly 650 persons, including the choir and children. The cost of the church was 3,831*l.* The whole of the works have been executed from the designs of Mr. J. Johnson, of London, the architect, and the contract for pulling down and rebuilding the church was carried out by Messrs. Dove, Brothers, of London.

Dechford, Hartford.—It having become necessary, in consequence of the unsafe condition of the tower of Dechford, to remove and reconstruct the upper portion, a lofty spire has been erected. In addition to this the old and somewhat inconvenient pewing has been removed, as well as the gallery, and the interior of the church has been renewed, repared, and restored, under the direction of the architect, Mr. A. Blomfield. The total expense is said to be over 1,000*l.*, of which sum nearly 950*l.* have been raised.

DISSENTING CHURCH-BUILDING NEWS.

Sunderland.—Trinity United Presbyterian Church, Sunderland, has been inaugurated. The site is in Toward-road, facing the new park. The edifice is approached by a broad flight of steps, through a terrace of trees, and the front of the land, almost perpendicularly towards the back, to the extent of upwards of 20 ft., a school-room of this height, and of proportionate length and breadth, has been obtained. The church is capable of accommodating 800 persons. In addition to the church and school-room, a session-house, vestry, and teacher's rooms, with conveniences, are attached. The building is designed in the Gothic style of architecture, and is built of stone throughout. The total cost will amount to about 4,000*l.* Mr. R. Allison, of Withernsea, was the builder, Mr. H. Andrews the clerk of the works, and Mr. T. Oliver was the architect.

Burslem.—The Wesleyan chapel at Burslem is to be considerably enlarged, with a view of providing proper accommodation for school children in the gallery during divine service, and additional sittings for the general congregation. The present front of the building will be taken down, and the length of the chapel will be increased 16 ft. the new front being in the Corinthian style of architecture. There will be a porch, with new staircases and vestibules. The gallery over the new part will be used for the accommodation of the school children during service, and additional sittings will be added to the body of the chapel. The work is to be executed in Hollington and Grimshill stone, the shafts of the front windows being of Aberdeen granite. There will be new windows to the sides of the chapel, glazed with obscure glass with ornamental margins. Mr. John Stringer, of Sandbach, has contracted to do the work, from the designs of Mr. George Woodhouse, of Bolton. The total cost of the alterations will be about 3,000*l.* The corner stones of the new portion of the chapel have been laid.

Walsley.—A Wesleyan chapel and school for the suburbs of Belloe Vale is to be erected, and, with this view, a premium was offered for the

best place, and out of five sent in one forwarded by Mr. Watson, of this town, architect, has been selected. The chapel will be 41 ft. long by 31 ft. wide, and the schoolroom 30 ft. long by 15 ft. wide. The design is Gothic. The external facings will be red pressed bricks, relieved by white and blue bands and arches and stone dressings, the front gable to be coped with stone and have ornamented terminations and iron cresting. The roof will be of cedar shingles and will be covered with blue slate. Internally the fittings will be of red deal, and these also and the roof timbers will be stained and varnished. The division between the schoolroom and the chapel is so arranged that the two can be thrown together. The chapel will seat 210 adults, and the school accommodate 100 children. The cost of the building will be over 4000. The architect has also been asked to prepare the plans for the works. He has also been instructed to prepare a design for the chapel and school at Eastmor, which are to cost about 1,200.

Shell—The New Independent Chapel at Battershaw has been opened for divine service. The edifice stands in the midst of a large population, on the north side of the Halifax and Bradford turnpike-road, and a few hundred yards from the school-room in the direction of Battershaw. The architecture is Gothic, and the plan consists of an elongated nave, with an apse for the altar, at each end of which are side aisles and have sloped roofs. There is a gallery over the entrance-door, and provision has been made for the erection of side galleries when required. The accommodation at present is sufficient for about 450 persons. A spirelet rises to a height of 90 feet from the front angle. The roof is open, the windows of tinted glass, and the vestibules and aisles are laid with mosaic tiles. The building is in the form of a cross, the arms of which contain 2,522 square yards, the cost of which was £252. 4s., being 2s. per yard, and is enclosed by a fence-wall. The contractors were—Messrs. Mr. Thomas Lightowler, Battershaw; joiner, Mr. John Patohett, Clayton Heights; glazier and painter, Mr. Henry Crowther, Shell; slaters, Messrs. Hall & Nelson, Bradford; plaster, Mr. Samuel Wilson, Strawberry Bridge; ironmonger, Mr. John Robinson, St. James's. Mr. F. Pritchett, Darlington, was the architect. The cost, including building and site, will be about 2,400*l.*

Nottingham.—The new Congregational chapel, St. Ann's Well-road, Nottingham, has been opened for divine service. The building is situated at one angle of the square formed by the junction of St. Ann's Well-road, Great Alfreton-street and Upper Collyer-street. The walls, the materials being red brick, and stone dressings relieved with bands of blue bricks. On the front elevation are the two principal entrance-doorways, the heads of which are of moulded stone, pierced in cusped foliations. Between the entrances, which are approached by a flight of steps, is a large window, divided into two lights, and having cusped tracery in heads, and with moulded jambs and mullions. In the gables above these windows is a circular stone window with moulded tracery. Around the windows are arches of moulded and cut bricks, the mouldings consisting of a series of raised bosses. The front gable is surmounted with moulded stone coping and a cross of ornamental design. Between the side windows are brick buttresses, having weatherings of cut bricks. The interior of the chapel consists of a nave, with side-aisles, divided by an aisle of four bays, with pointed arches, on iron columns, having moulded caps and bases. Above the arcade is a clerestory. At the east end is a circular stone window of foliated tracery, filled in with stained glass. The roof is lofty, all the timbers being visible, and, instead of being painted, are stained a dark brown. The floor is boarded, the whole being stained a dark tint. The galleys consist chiefly of rings encircling the capitals of the iron columns, with brackets at the palpit end. The church is 63 ft. long by 40 ft. wide, providing accommodation for 500 persons; and underneath is an extensive school-room, the floor being raised 10 ft. above the soil, which is only 2 ft. 6 in. below the ground-level, so that the whole is well lighted from windows on both sides. The new edifice will cost 1,900*l.*

Hipperholme.—The corner-stone of the new Wesleyan chapel here has been laid. The site is immediately opposite the Whitehall Inn, the principal front being into the Brighouse and Deholme Gate turnpike-road. Messrs. R. Ives & Son, of Halifax, are the architects, and the chapel will be in the Geometric Gothic style. It will be built of Northwram wall-stones, with

freestone designs. The length will be 50 ft., the width 37 ft., and the height externally 50 ft., and there will be minisai's and other vestries at the back. The interior will be divided into six bays. The roof will be an open one, with circular bindings, supported by stone corbels. One bay is treated as a transept, and the roof is of a groined character. It will be lighted by west end over the entrance and vestibule capable of accommodating 180 persons. The internal wood-work will be of yellow pine, stained and varnished, and on the ground-floor will be 298 sittings, making altogether a total of 478. The schools and class-rooms, to accommodate 100 scholars, will be constructed by the chapel at the east end. The principal entrance is to be at the west front, by a moulded doorway. On the side elevations there will be four bays, each having a two-light traceroed window, the other bay being brought out to form a transept, having a five-light window. All the windows are to be glazed with quarry-glass, and the chancel is to be lighted by a canopy depending from the roof. The total cost will be 1,953 l. The contractors are:—Masons, Messrs. Fletcher & Sharp, of Hipperholme; joiner, Mr. G. Townsend, Halifax; plasterers, Messrs. J. Bancroft & Son, Halifax; and plumbers, Messrs. Fisher & Son, Halifax; the total amount of the cost of the chapel has been given by the trustees of the late Mr. Wm. Heap, of Halifax.

Birkenhead.—A new Primitive Methodist chapel has been built in Grange-lane, on land purchased from Sir William Jackson, bart., and is a central and suitable situation. The new building, built by Mr. W. Dickinson, of Senecombe, from designs by Mr. John Wild, of Oldham, the architect. It is situated at the corner of Grange-lane and Horatio-street, opening into which are large school-rooms. The chapel will provide seat-room for 600 persons, and is the fifth place of worship being brought to the body in the Birkenhead district. The cost, including the land, will be about 3,000*l.*

East End (Middlesex).—The memorial stone of a Wesleyan new chapel has been laid here, by Sir F. Lyett. Mr. J. Willey is the architect, under whose superintendence the chapel has already been erected, by Messrs. T. Niblett & Son, of Hornsey Rise, builders. The cost is about 1,000*l.*, and the building will seat about 250 persons: the school, which forms a transept to the chapel, will seat about eighty more. The building is in the Early English style.

PROVINCIAL NEWS.

Preswick.—The new workhouse and hospital situate at the Cleveland, Ormspall, cover some three acres of land, with about seventeen surrounding. The buildings and ground are estimated to cost 40,000*l.*, or it should be stated, the guardians of the union have sought borrowing powers for that amount. Mr. T. Worthington, Manchester, is the architect, and Mr. J. W. G. Smith, Manchester, the building contractor. The building which at present contains 125 inmates, but is calculated to accommodate 312, is situate in the immediate vicinity of the Manchester workhouse at Ormspall, and was entered upon by the inmates in September last. Leaving the entrance lodge, almost immediately in front, and carrying the eye to the back of the building, are seen a number of gates, which are arranged to command ready access to any portion of the house or hospital, are the apartments of the master and the matron. On the right of the rooms occupied by the master are the male wards, and to the left of those occupied by the matron the wards set apart for the female inmates. The first room on the left of the entrance is a large room for clothing and material for clothing, that worn by the female inmates being made upon the premises. Adjacent to this, and well lighted, ventilated, and warmed, is a large room termed "the day-room," for old papers. From this point, the corridor is interrupted, and the visitor enters upon a distinct ward, the second of the building, which is the most handsome, there are twenty-six at present. On either side of the central building, from the master and matron's apartments, are distinct day-rooms, baths, and yards and offices for male and female inmates. Immediately above the wards are the dormitories, and on the ground floor a similar rule is observed. The imbecile dormitories are separated from the other dormitories by a wall, and are independent and independent ward. A similar observation is visible in the separation of the able-bodied

panpers' apartments. At right angle to the main building, and connecting it with the premises in the rear, is the chapel, situate immediately over the general dining-hall. From this point,—the chapel occupying the centre of the whole block,—wash-houses, laundries, drying-rooms, and baking departments are ranged. Separated by a covered passage-way from the other buildings, the fever and hospital wards are erected in the rear of the buildings. Hospital accommodation is afforded in four separate wards for thirty-two patients, and in a large hall for the new building, the Prestwich Board, according to the new legislative enactment, found it necessary to supply 1,200 cubic feet per inmate.

FROM VICTORIA.

Melbourne.—The foundation stone of St. Mary's Roman Catholic Church, at Williamstown, was laid about twelve years ago by Dr. Wilson, then Bishop of Tasmania. The works were for a short period pushed forward, but when the walls of the western end were a few feet above ground they were discontinued, [and have ever since lain in a state of stagnation. A few months back the Roman Catholics of that suburb determined to resume operations, and the original plans not being forthwith, called for competitive designs, incorporating the existing work for the completion. The one furnished by Mr. T. A. Kelly, of Elizabeth-street, architect, was selected. The plan includes a nave 24 ft. wide, and side aisles giving a total width of 40 ft. and 100 ft. in length. A polygonal apse terminates the nave, while the "Ladies Chapel" and tower terminate the north and south aisles respectively. The tower is surmounted by an octagonal spire rising to an elevation of 110 ft. Internally an arcade of six bays of moulded arches, resting on cylindrical shafts with carved capitals and moulded capitals, divides the nave into three aisles. The clerestory is pierced with foliated windows, two to each bay. The height from the floor line to the ridge of the roof is 40 ft. The principal entrance is at the west end, and consists of a projecting covered porch, having shafts, arch moulds, and dressings of freestone; similar porches, one at either side, give access to the nave. The large windows set in a recessed wall, occupying the centre of the gable, and the ornamental counterpoint the apex. The roof will be open-timbered. The nave passages and porches will be laid with Maw's encaustic tiles. The main building has been constructed of bluestone, with fine axed dressings of the same material, while the tracery of the windows is completed in freestone. The church, when completed, the church will afford accommodation for about 800 sittings, and the expenditure will be under £6,000.

The new hall at the Criterion Hotel has been opened. It is nearly 60 ft. by 23 ft. in the clear, and 20 ft. from the line of the floor to the centre panel of the ceiling. The ornamentation of the hall is in the Greek style, the walls having panelled pilasters, with enriched caps and centre paterae, surmounted by an enriched entablature, the frieze containing the honeysuckle and the hawk of the order in relief. On the west side of the hall are six windows with enriched blockings and architraves, and the eastern wall has large mirrors to correspond. In the centre of the ceiling is a sunlight, 4 ft. in diameter, ornamented with Greek margins; and on either side are centres of flowers. The ceiling is secured throughout by a galvanized iron pillar, which runs at the back, and the paterae are fitted with suitable gas brackets in case they should ever be needed. The architect for the work was Mr. Peter Matthews, of Collins-street; and the contractor Mr. George Freeman.

It is proposed to fill up the niche in the front of the Mechanics' Institution with a full-size statue of Shakespeare, chiselled out of some very choice freestone from the quarries in the Barra-boul-hills. Mr. Brain, a Geelong sculptor, has undertaken the performance of the work, more for "the cause" than the profit. This artist is carving a group titled "Faith gazing on the Cross," in monumental marble, for Mr. Le Sur.

At a meeting, in October, of the Technological Commission, held in the Exhibition Building, the members present being Judge Bindon (chairman), Messrs. Rolfe, Thomas, & Blair, M.L.S., and Dr. Bleasdale, the chairman presented a report of his visit to the carpenters' and joiners' school for technical education. He stated that the committee of the school were progressing in

their arrangements for organising the school in an efficient manner. The school had only been opened on four nights, and there were twenty pupils present. The committee proposed that the course of education should be general, so as to meet not only the special, but the general wants of the trade they represented. Preparatory classes were to be commenced. A class for geometry had been already formed, and classes for mechanical, architectural, figure, and other branches of drawing were about being formed, as was also a class for the making of models, &c. The committee expressed to him their desire for assistance from the Technological Commission, to enable them to purchase figures, models, and other necessary materials, and also stated their opinion that nothing would be more likely to advance industrial education than the delivery of lectures. On the motion of the chairman, the commission granted £1. to the school. Mr. Rolfe then reported that he had visited the school of design at the Trades' Hall. There were 102 pupils present. £1. was granted as a donation to the school, to enable them to purchase materials.

Melbourne derives a considerable part of its water-supply from a reservoir in the neighbourhood, named Yan Yean. A quick-sighted physician, who has brought the subject before the Medical Society of Victoria, has discovered that the whole drainage of a township, after creeping through a foul swamp, flows by three outlets into the main feeder of the reservoir.

The Jewish fraternity of Melbourne are about to erect almshouses for their poor, and have accepted a design for the erection of the same. Competitive designs were invited from the various architects, and about a dozen designs were sent in, when one with the motto "Charity" was accepted, the author being Mr. Geo. R. Johnson, of 45, Elizabeth-street. The design selected is in the Lombard style of architecture. The buildings will form two sides of a quadrangle, fronting the St. Kilda-road and Union-street, with a syzygogue on the angle. The whole is estimated to cost £5,000. It is intended to build only a portion at present, and fence in the land, which will cost about £1,000.

Barchworth.—The Post and Telegraph Office at Barchworth, near the corner of Camp and Ford streets, is erected in the modern Italian style of architecture, of brick, stuccoed, and on granite foundations. It contains on the ground floor, post-office, telegraph office, savings-bank, and money-order offices, postmaster's private office, battery-room, store, kitchen, and out-offices. The receiving and delivery windows are under an arcade 38 ft. in length, fronting High-street. The clock tower, constructed of granite, has a three-faced dial. The roofing is of Bangor slate. The upper floor contains quarters for postmaster consisting of six rooms, passage, and terrace over the arcade. The whole is being erected in connexion with the Public Works Department by Mr. Nation, whose contract amounts to £3,671. 10s., and was to be open to the public by the beginning of the new year. The *Illustrated Australian News* contains good engravings of this and three other new edifices on one of its recent pages.

Castlemaine.—The Castlemaine Hospital, in the Italian style of architecture, erected from designs by Mr. J. A. B. Koch, and built by Mr. Borland at a cost of £2,600, has been opened for public use. It is constructed of brick, on sandstone foundations, with granite plinths, and is approached by a double flight of granite steps. It stands on a piece of land granted by the Government, and will ultimately form the centre block when the entire structure is completed. On the ground floor is an entrance-hall, 9 ft. wide, extending from front to back, having on its right board-room, patients' waiting-room, consulting-room, and dispensary; and on its left, casualty-ward, with bath-room, lavatory, nurses' room, closet, and scullery. From the main hall a staircase leads to the upper wards. The basement, which consists of spacious dining-room and sleeping apartments for the servants, is reached by a separate staircase leading from the dispensary. All the apartments are well lighted and ventilated. The pieces of land around the building afford space for recreation grounds, which are neatly laid out and ornamented with shrubs. The situation is pleasant, being at the north end of the town, facing the railway, the back garden having a frontage to Barker's Creek. The new portion has accommodation for fifty patients, and has all the latest improvements connected with hospitals.

Ballarat.—The Ballarat Water Supply Com-

mission have decided to proceed with the erection of new offices at the corner of Greenvile and Lewis Streets, opposite the new premises of the Gas Company. The building will be after a design by Mr. Bagge, the committee's engineer, and will consist of two stories, the estimated cost being something like £500.—The foundation stone of the new Town-hall, Ballarat, has been laid. The principal entrance to the municipal offices will be in the centre under the tower, which will stand right out to the front, so that the steeple, which has just been laid, will also be the foundation-stone of the tower. This tower is to carry the Alfred memorial bells, which have already arrived at Ballarat. They have been cut by Messrs. Meers & Stalbank, of Whitechapel, were already noted in the *Builder*. The bells are valued at £1,800. The present contract for the erection of the tower has been taken by Mr. William Cowland for £7,767.

Books Received.

On Art Training. By JOHN G. CRACE. London: John Bumpus, Oxford-street.

UNDER this title Mr. Crace has published the address delivered by him at a meeting of Art Workmen, February 15th, to which we referred at the time. He begins with an art-workman as a lad, and shows what should and may be done for him by his parents, and what he should, and, if he please, may, for himself. We willingly reprint his excellent matter of which it consists, but think it better to recommend the purchase of the tract itself. We content ourselves with quoting a little story that Mr. Crace tells to show what may be done where there is a will. He is speaking of the advantages obtainable by travelling, and says,—

"And I think it quite possible for a young man who is careful to be able to do it. I knew a young fellow many years ago now, who scraped together the sum of 300*l.*, being determined to travel in Italy and see all the wonderful works of art there, and he went.

Of course he was obliged to see every artist economy. He took contrivances now and then in the dirt parts of the country, but he mostly walked, and chose his routes through beautiful scenery as much as possible. Well, he went all over Italy, he saw Milan, Venice, Florence, Rome, and Naples, especially in Mediceal style. He, in time, earned a sketch of much that he saw; and, though he returned to England with only a few shillings in his pocket, among whom I truly class myself, his name was James West.

This young man was a writer by trade; he taught himself to draw, and by practice, he drew beautifully; he applied himself very diligently to work; he got on; he copied manuscript writing and illumination; he did artist work, especially in Mediceal style. He, in time, earned a sketch of much that he saw; and, though he returned to England with only a few shillings in his pocket, among whom I truly class myself, his name was James West.

I think it is not useless to mention this little episode to you; for many a man, by abstaining from drink and by careful economy, may save up 300*l.*, and every man can learn to draw."

Notes on Sanitary Reform. By a Sanitarian. London: Simpkin, Marshall, & Co. Bristol: Kerslake & Co. 1870.

THIS very useful contribution to the great cause of sanitary reform has been re-issued in a revised form, with the name of the author, Mr. S. Smead Brown, of Bristol. It has been well circulated, especially in Bristol. There is a discreditable freemasonry existing in some towns to suppress all efforts to throw light upon the real state of things, and it is against this evil spirit that the shining pamphlet under notice has been chiefly directed. It is well adapted to strengthen the hands of sanitary reformers in such cases, and so to do good.

VARIORUM.

"Street's Indian and Colonial Mercantile Directory for 1870." Street & Co. 11, St. Paul's Church-yard. This Directory about which it is useful, and destined to live. To London and other merchants, traders, and to all interested in India and the colonies, it is indispensable, although, no doubt, there is much still to do in rendering it complete as a directory. The present issue is said to contain much additional information.—"The Bicycle: its Use and Action." By Charles Spencer. Warne & Co. The illustrations given, and illustrated, in this little volume are, we dare say, correct, since they are given by a manufacturer of the article, who advertises his goods at the end.—Mr. J. N. Lockyer, in his third lecture on the "Sun," delivered at the Royal Institution on Saturday last, showed (according to Nature) an interesting experiment with a candle, which

gives a good general idea of the solar phenomena as observed by his new method. As round the sun Mr. Lockyer can spectroscopically detect an ordinarily invisible hydrogen envelope which is rendered evident by bright lines only as contrasted with the nearly continuous spectrum given by the white light of the double surface of the sun, so also there is an ordinarily unnoticed envelope (of sodium vapor) round a common candle flame which gives a bright line spectrum as contrasted with the continuous spectrum of the flame itself. Mr. Lockyer also showed that some of the phenomena he has seen when watching a solar storm may be reproduced by disturbing a candle flame. The Food Journal says:—"In ten years a fishing village may spring up into a town—a quiet bay become a fashionable watering-place. The increase may not be the natural growth by excess of births over deaths, but due to other causes, acting spasmodically and unforeseen. The further, therefore, we get from a census, the less reliance can we place on the figures denoting the estimated population, that is, the population at the preceding census, with the addition for each year that has since elapsed of the annual increase, as ascertained from an average of the preceding decade of years. It may be Utopian to hope for a more frequent enumeration of the people; but Prussia, with her triennial census, and France, with her quinquennial returns, should stimulate our suspicions in this direction." Why should there not be an annual enumeration of simply the numbers and ages of the population?—"American Society of Civil Engineers' Transactions." No. XIV. March 16, 1870. A paper on American Inter-oceanic Ship Canals, by Col. J. W. Adams, member of a committee on this subject, occupies the pages of the number under notice. Col. Adams advocates the Tehuantepec route in preference to any other of the twenty-six various routes for a canal across the narrow neck of Central America. The Darien route he considers to be scarcely practicable, and if so at all, it would require, for a thorough cut, a ship tunnel miles in length. The Tehuantepec route, however, would require locks; but Col. Adams states that as the tide on the Pacific side rises to 28 ft. above low water, it is sure to be in the Gulf of Mexico, locks are unavoidable on any route. The society, having heard the paper, passed a resolution in favour of the Tehuantepec route as best suited for United States purposes as regards its northern position, and expressing an opinion that a survey of it should be made before the citizens should be committed to any other route.

"Trade Unions and the Cost of Labour." Speech delivered by Thomas Brassey, jun., M.P., in the House of Commons, 7th July, 1869. London: Longmans, Green, & Co., 1870. The vast and varied experience of Mr. Brassey, sen., gives great force to anything based, as much of his son's speech was, upon that experience. Mr. Brassey, in reprinting his speech, has given additional statistical details, and inserted a few new observations on the danger to the working classes of the restrictions imposed on the free supply of labour by the dictation of ill-informed agitators. In this speech Mr. Brassey urges the injustice of condemning British labour as more costly in its results, simply because the daily rates of pay are higher in England than on the Continent; but he "complains that the English workmen are being betrayed by the ill advice of leaders who have no just claim to the influence which they unhappily possess."

"Report to the Finance and Improvement Committee of the City Commissioners of Sewers, upon Street Tramways." By William Haywood, Engineer and Surveyor to the Commission. This report shows that the total length of street in the City at present proposed to be occupied is 3,268 yards, or about a mile and three quarters. The total length projected in the whole metropolis is 134 miles. Mr. Haywood's conclusions are that,—

"While there are undoubtedly advantages in street tramways, yet there are many disadvantages attending them, but there is no doubt that they will be found to be convenient to a vast number of people: on the other hand, in streets of great traffic, it will no longer be possible to maintain the pavement in a suitable condition in which they now are; and therefore that the comfort of those who ride in or drive vehicles of another description is more or less sacrificed to the comfort of those who ride on the tramways."

Mr. Haywood also remarks that,—

"Special consideration will be needed as to how far companies should be allowed to establish a monopoly, degree, be considered a monopoly of portion of the highway; and it becomes a question, if the advantages to be

derived from the tramways are clear and undeniable, whether it should not be the duty of the Highway Boards throughout the country to form and maintain them out of the rate; and this is a fundamental question which lies at the threshold of the whole inquiry."

"Report of the Health of Liverpool during the year 1869." By W. S. Trench, M.D. Medical Officer of Health for the Borough. (Liverpool Printing Company.) From this report it appears that in 1869 the death-rate of the borough was equal to 28.9 per 1,000, or 3 per 1,000 less than the average rate which has prevailed for the past ten years. The death-rate of the parish was equal to 31.6, and of the out-townships 25.8 per 1,000. The highest rate was found, as might be expected, in Vauxhall Ward, where it was 38.9 per 1,000. With reference to the comparative mortality in the large towns of the kingdom, Liverpool stands fourth, being less unhealthy than Glasgow, Edinburgh, and Manchester. The population per acre is higher in Liverpool than any other town in the kingdom, being 97.7 per acre. In Manchester the average is 91, in Glasgow 79, while in London it is 40.7, in Birmingham, 46. The average age at death throughout the borough is 23 years. The deaths of infants below the fifth year of their age amounted to 7,319, or about 40.6 per cent. of the entire number of deaths, and were equal to 10.5 per cent. of the entire number of children under that age. Infant mortality is highest in Scotland and Vauxhall Wards. The number of deaths from typhus and intermittent fever was 753, which is considerably below the average for the preceding ten years, the figures for which are given at 1,050. Dr. Trench says of scarlatina that it assumed during the last six months of 1869, within the borough of Liverpool, the gravity of an epidemic. It accounted for 1,042 deaths out of 1,744, and was at the rate of 2 per 1,000. It constituted 7 per cent. of the whole deaths, and was most fatal in the third and fourth quarters of the year. Of the Workshops' Regulation Act the medical officer is constrained by further experience to express his opinion that, "however beneficial in intention, it is not only impracticable in its machinery, but inequitable in its effects."

Miscellaneous.

Society for the Encouragement of the Fine Arts.—On Tuesday last there was an exhibition of a collection of drawings and paintings by Birkenhead, Birchall, and Mole, Henry Tidy, Girardot, Shadlers, and other artists. Mr. Richard Rodgrave, R.A., in the chair. Mr. Henry Tidy read a paper on "Beauty and the Beautiful." He insisted that the source of all beauty (which he defined to be realism idealized) was not something apart from, but existed only in, our minds. He next adverted to the different types of beauty—to the melancholy and the stately of Italian art, to the soft and ideal; to the gorgeous coloring of Rubens, which was but a reflex of his own times; and to English landscape painting and portraiture, which accorded with our scenery and mode of life; and he concluded an admirable lecture with some feeling allusions to the disappointed hopes of the artist in his search after beauty, to the shortness of the moment of inspiration accorded to him, and to the impossibility of his attaining to the ideal perfection which was the aim of his life.

Discovery of a Roman Amphitheatre in Paris.—Modern Paris covers the ground of old Lutetia, the capital of Transalpine Gaul, and it is surprising that so many centuries should have passed before this relic of the old time had been brought to light. This Gallo-Roman amphitheatre, in which public games were held as late as the period of the Merovingian Empire, occupies now the eastern side of the Mont Lucatins, near the Montagne Ste.-Genevieve. It had become gradually hidden under a thick deposit of rubbish from 7 to 8 metres deep. About one-half of its vast oval, according to *Galignani*, is now uncovered, in the Rue Monge, on the site where, not many years ago, stood a convent of English nuns. The rows of stone seats on this side are nearly all destroyed, but the main walls, built of stone and Roman cement, without any admixture of brick, are still in good preservation. Two of the recesses in which the wild beasts used to be kept are still visible. The style of building denotes a later period than that of the Palais des Thermes. Several medals and fragments of a fine turquoise and lapis-lazuli necklace with gold clasps have been found.

The Influence of the Suez Canal on Ocean Navigation.—At a recent meeting of the Institution of Naval Architects, Mr. J. D'Agular Samuda, M.P., read a paper upon "The Influence of the Suez Canal upon Ocean Navigation." He said that the canal would make the following savings in distance in the voyage to England:—From Bombay, 5,570 miles; Ceylon, 3,840; from Hong Kong and Singapore, 3,520; and from Melbourne, 91 miles. This represents a saving of about half the distance between England and Bombay, about one-third the distance between England and China, and practically none between England and Australia. Manifestly, then, the canal will greatly benefit carriers. The opening of the canal had caused a great falling off in the construction of sailing ships, and it tended to the further substitution of steam for sails in carrying on our traffic with the East. Without doubt, nearly all the traffic between here and Bombay will be lost in sailing-ships; but as the lives of sailors, and the loss of long duration, be thought the present panic among our shipping was not fully justified. He thought that there would shortly be a great substitution of steel for iron in the hulls of ships, and a general adoption of the principles of expansion in engines. A report presented by M. de Lesseps to the meeting of Suez Canal shareholders at Paris, we may here add, states that the total number of vessels that passed through the canal from the day of its opening to the 15th of March was 209, representing 146,631 tons; and of these 59,052 tons were English vessels, 34,390 French, 17,666 Egyptian, 14,625 Austrian, 7,386 Italian, 4,178 Russian, 4,000 Norwegian, 3,200 Dutch, 880 German, 528 Spanish, 3,015 Prussian, 869 Portuguese, and 312 Turkish. Of the 209 vessels sailing from the canal, the others were sailing homeward. With respect to England, the report says, "England has from the first day been able to utilize the canal largely. You have seen what an imposing commercial fleet she has sent to it, and that fleet augments every day. Building yards work literally night and day in the United Kingdom in transforming or building vessels. We could cite to you a single company which, in its calendar, has not shown an annual payment of 100,000l. for the canal."

Sunday Water Supply.—The want of a supply of water on Sundays, in the metropolis, has long been a grievance, as old readers of the *Builder* may well know, from our frequent endeavours to obtain a remedy for this grievance, which, however, still exists, though not to such an extent as formerly. We are glad to notice that leave has been given to Mr. Stapleton to bring a Bill before the Legislature requiring the metropolitan water companies to supply water for domestic purposes on Sundays. The West Middlesex Water Company has already begun to give a Sunday supply, the Chelsea Company has promised to give a half supply; the Grand Junction Company supplies a considerable quantity of water; and the New River Company supplies 67,000 houses on Sunday. The East London Company has always been ready to furnish a Sunday supply when needed in times of epidemic, upon which Mr. Stapleton very properly remarks:—"By giving a Sunday supply in time of epidemic, the company admitted its necessity; and by withdrawing it at the end of one outbreak of epidemic disease they had laid the foundation of another." The South-west and Vauxhall Company supply on Sunday the whole of their metropolis but not their suburban district; and the Lambeth Company has followed the course of the New River and Grand Junction Companies; while the Kent Company, which supplies Greenwich and Woolwich, "made the objection that a great part of their district was not in the metropolis."

Institution of Surveyors.—At the ordinary general meeting held on Monday, April 4th, the discussion on the paper by Mr. J. Mathews, entitled "A Plea for Culture in the Profession of a Surveyor," then ensued; and a vote of thanks was accorded to Mr. Mathews. The next meeting will be held on Monday evening, April 25th, when a paper will be read by Mr. E. Hyde, in continuation of his paper of last session, entitled "Parochial Assessments." Answers to the Questions on Agricultural Customs are needed for the following counties, and the council appeal to members and their friends to supply the information necessary to complete the returns, viz.—Westmoreland, Lancashire, Northampton, Leicester, Berks, Essex, Kent, Dorset, Rutland, and Worcester.

Raising the Euston Station Roof.—Five bays, or 100 ft. in length, that is the distance included between six columns, and 145 ft. in width—the whole width of the station—are raised at once in the following manner, according to the *North Londoner*.—The columns are first detached from the ground, and a platform of wood, 3 ft. or 4 ft. square and as many inches thick, is placed on each side of them, and cut and wedged up so as to overcome all inequalities, and present a perfectly smooth upper surface. On each platform so prepared is placed a screw-jack—a strong iron frame on a very wide base—containing an immensely powerful steel screw, 3 ft. in diam. worked upwards by means of levers, which enter horizontal holes in the head. This head has a pivot at the top, on which turns a cast-iron socket, 9 in. or 10 in. square, made to receive the ends of massive timbers that go to the whole height of the column into similar iron sockets in the underside of a sort of iron box made to bolt like a mould round both the cap of the column and the bottoms of the two iron girders carried by it. In some cases the timbers, which are two separate pieces bolted together, do not enter sockets at the top, but are cut to fit outside the iron girders, and screwed together; and as the soft wood yields readily to any inequality in the iron, a firmer and more vice-like hold is obtained by this than by the former method. In addition to this, strong beams are screwed together and arranged according to scientific principles, so as to make the part that is to be moved one solid mass, and to prevent the slightest possibility of its tilting over in any direction; and so skillfully has the disposition of these numerous supports and ties, been managed, that there is not the slightest obstruction to the traffic. Everything is stowed away up in the air above the iron rails of the roof, except a few scaffolding poles that get into nobody's way if nobody gets into theirs. The segment to be moved is severed from the rest, the boarding and slates of the roof taken up, and the glass of the skylight taken out at the joint, and all is ready for the great operation of lifting to begin.

The Rectitude of the Earth.—A stupid attempt has been made for some years past to induce the belief that the earth is a flat surface, and Mr. Hampden, who seems to have been persuaded that it is so, has rashly raised 500l. on the issue of an experiment on the Bedford Level in order to test the truth of the assertion. His offer was taken up by Mr. A. R. Wallace, and arrangements satisfactory to Mr. Hampden having been made, the experiment was tried by means of three discs, rising 12 ft. above the level of the surface of a piece of water large enough to show the curvature, if there were any. The reference was just made to Mr. Hampden, the central disc, as every one with grain of sense opposed it would, rising considerably above the line formed by the two outer discs, as seen from one end through a selected and approved telescope. The curvature to and fro in six miles to the extent of about 6 ft. was proved. As was also to be suspected, an attempt is being made to shuffle out of the bet, now that it has been decided.

Civil Service Estimates.—The Civil Service Estimates have been issued. The total is 16,416,305l., against 13,618,387l. last year, showing a net increase of 2,797,918l. On the works and buildings there is a net decrease of 70,173l.; on salaries and expenses a net decrease of 30,671l.; on law and justice a net increase of 138,592l. The department of education, science, and art shows a net increase of 88,916l. Under this head the cost of public education is shown to be 914,721l., against 840,711l. last year.

Guthlaid, London.—At the last Court of Common Council an offer from some of the principal inhabitants of the ward of Farringdon Without, to put a stained glass window in the Guthlaid, in commemoration of the great improvements which have recently been carried out in that ward by the corporation at an expense of 3,500,000l., was accepted by the court, and it was referred to the City Lands Committee to give the necessary directions.

Interesting Discovery at Newcastle.—The workmen engaged in the excavations near the Black Gate, Newcastle, have discovered a curious subterranean passage, at a depth of about 12 ft. from the surface. The passage extends underneath the ancient gateway, and is, like the basement of that ancient building, in an excellent state of preservation.

Rome.—A correspondent writes,—"The British Archaeological Society of Rome continues its work steadily, and visitors to Rome now hear a great deal more about the antiquities than they ever did before. The society has stirred up others to emulation, and has given rise to great activity to the study of the antiquities of Rome. The weekly lectures are always well attended, and give a good deal of useful and interesting information, not easily obtained elsewhere. Mr. Shakspere Wood, the secretary, is indefatigable in giving lectures on the spot, sometimes three times a week. But there are always two sides of every question, and I hear that the society consists almost entirely of the strangers who flock to Rome, and that the older residents in Rome generally hold aloof from it; that even the members of the committee, who are the managing body, are sometimes strangers, who hardly know the names of the places they go to see. I hear little of Mr. Parker's excavations this season, and I am told that this arises from his finding difficulties put in his way by the Government authorities at the instigation of the local antiquaries,—that they have not renewed his permission, which they had given last year. It is against the law in Rome for any one to dig more than 6 ft. deep without permission from the government, and any labourer found doing so is liable to be sent to prison at once by the police without any form of trial. Mr. Parker has, however, continued to go on exploring the remains of the old Mamertine prison, and has found three doorways under the level of the ground in the cellars, and therefore at a great depth below the surface. All the walls and doorways are made of the large square or oblong blocks of tufa, the same as the walls of Servius Tullianus.

Worcester Cathedral Clock and Bells.—The Rev. R. Outley, minor canon of Worcester, writes to the local papers saying that the bells are already pronounced by competent judges to be of surpassing excellence, and that the clock has been for some time ready for erection, and as the internal restoration of the tower rapidly approaches completion, it will soon be placed in its proper position. He gives the following estimate of the total cost:—

Bells, cast fresh from all necessary	£3,677 0 0
Stings complete	600 0 0
Clock, about	400 0 0
Fisher tracing	70 0 0
Architect's commission, about	70 0 0
Gasfittings	12 0 0
Chiming apparatus	30 0 0
Wire for lower windows, about	30 0 0
Incidental expenses, including taking down old bells, pricing, admeasuring, &c., about	300 0 0
	£4,714 0 0
Amount already promised	£3,916 0 0
Leaving a balance yet to be provided of	908 0 0

An appeal is made for further contributions, to be sent to any of the Worcester banks.

Sewage Farming.—A paper on this subject has been read by Mr. Bailey Denton to the members of the Farmers' Club, and appears at some length in their Journal. The title of the paper was, "On Sewage Farming, and the Position of Sewer Authorities in relation to Lands to which Sewage is applied." There was a very full attendance. Mr. Denton, in the outset of his paper, said that his object was not so much to pronounce opinions of his own as to elicit the views of others; and, considering the highly practical character of his fellow-members of the club, he would avoid dwelling on those general agricultural laws which rule in sewage as in ordinary farming, and address himself at once to the particular objects of his paper, which, as a new branch of farming, demanded special treatment. An interesting discussion followed the reading of the paper, in which a variety of opinions were expressed.

The Late Mr. George Leather, C.E.—The remains of this gentleman have been interred in the Burmankia Cemetery, Leeds. In early life Mr. Leather enjoyed considerable reputation as an engineer. He was concerned in the improvements of the Aire and Calder navigation, by which it was made available for sea-going vessels to Leeds and Wakefield, and also in the like improvements of the River Don navigation to Ebfild. The various bridges which have been erected over the Aire in Leeds within the last forty years were also designed and executed by Mr. Leather, either solely or in conjunction with his son.

The New Public Buildings.—In the House of Lords last week Lord Redesdale said that he had looked at the designs of the new public buildings, but he was disappointed to find that there was no block plan to show the disposal of the buildings when erected. He wished to know whether there was any objection to the preparation of such a plan; also whether a connexion could be made between the new buildings and this Privy Council offices. He drew attention to the fact that a house in Spring-gardens was lately taken possession of by a banking company, and that a large residential building was about to be erected on its site. This house might have been purchased some time ago at a low figure, and by means of its clearance a fine entrance into the mall might have been secured. Earl Granville said, in reply, that he would make inquiries into the matter.

The Boutei Bridge.—According to the *Moniteur*, the model of a single span, of 80 metres, is now nearly completed. The two abutments, formed of blocks of granite, and platform are set up for a length of 80 metres (the ground where the model is provisionally installed, at the "Dépôt des Marbres," not allowing of the whole length of 100 metres being extended). The trees were tried on different occasions, and resisted, without the slightest deflection, a strain double that of the trial weight required by the rules of "The Ponts et Chaussées;" lastly, the "longerons," or rafters, are ready to be mounted. The model is intended to prove the efficacy of the Boutei system for the construction of a great bridge over the Channel.

A Benedictine Monastery in Wales for Father Ignatius.—The foundation-stone of a new monastery has been laid by Father Ignatius and his monks among the Black Mountains in Monmouthshire, in the Valley of Ewys, near Llanthony. A spectator thus describes the site:

"We were standing about 300 ft. above the sliding river Hendon, on the slope of the western hill, with a full view of the magnificent valley of Ewys to the north, and the north-western Black Mountains on either side. On the ground, a bold and beautiful round-shaped mountain stood out alone, separating two most lovely valleys, which swept past to the right and left. All was silent, solemn, beautiful, and still. A narrow river, verdant with ferns and bushes, ran down the valley, forming a fine foreground to the south-eastern limit of the site marked out for the new abbey. The level for the foundation of the west cloister was nearly finished. The foundation-stone was ready for the ceremony, being placed at the base of the first buttress of the west cloister."

"Scholars' International Exhibition."—The *Kensington News* says,—"A further novelty is in the course of introduction in Kensington, at the Allen-street Schools, in the form of a Scholars' Industrial Exhibition. The exhibition will comprise various specimens of ornamental and decorative art, results of applied science and skill in handicraft, with a large admixture of the more humble specimens of the arts practised in domestic life by the girls and young women connected with this institution. Mr. S. H. Troutman is the manager."

New Synagogues.—The new Central Synagogue, in Great Portland-street, which we illustrated on page 887 of our volume for 1869, has now been consecrated by the Chief Rabbi. The opening of the new Synagogue for Rochester and Chatham, built and endowed by Mr. Simon Magness, a merchant of Chatham, is postponed indefinitely, as Mr. Magness insists on having at the consecration, and taking part in it, Prof. Marks, who belongs to the "reformed" party amongst the Jewish community, and to this the Chief Rabbi and others object.

Billinggate.—A correspondent suggests a plan for the enlargement of Billinggate Market, by means of a floating covered way, to extend the entire length of the Custom House Quay, and of sufficient width to give an addition of four times the space of the existing market, with which it is proposed to connect it on the river-side, so as in no way to obstruct the navigation. The structure to be of a suitably ornamental character.

TENDERS.

For the erection of a villa residence, Crouch-hill, Hove, near Mr. W. H. Perry. Mr. Alfred W. B. Burder, architect. Quantities not supplied.

Timewell	£1,014 0 0
Wells	1,014 0 0
Dove	1,004 0 0
Williams & Son	1,007 0 0
Roberts	980 0 0
Carter & Sons (accepted)	1,040 0 0

For making 17,639 superficial yards of roads, &c., at Stoke Park, near Bristol. Mr. Henry Masters, architect.

Adams & Kirby	£2,990 0 0
Piddich & Sons	2,997 16 2
Wright	2,997 16 2
Bogers	1,906 13 0
Stacey	1,904 6 0
Nelson	1,785 0 0
Meredith & Sons	1,630 0 0
Davis	1,621 0 0
Salter (accepted)	1,521 0 0
bidwell	1,504 10 3

* Inf. anal.

For enlarging and restoring Starston Church, Norfolk, exclusive of the old materials. Mr. R. M. Phippen, architect.

Grinwood (accepted)	£725 0 0
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For alterations and additions to The Grove, Yorked.

Mr. R. M. Phippen, architect	£1,330 0 0
Grinwood	1,346 11 0
Smyth & Sons (accepted)	999 17 0

For rebuilding part of Whittle Mills, Chesham, for Messrs. W. J. Bech & Sons. Mr. E. Kingston, architect.

Little	£2,440 0 0
Reper	2,346 0 0
Wells	2,303 0 0
Griffiths	2,158 0 0
Brown	2,060 0 0
Sanders	1,960 0 0
Fisher	1,954 10 0
Sudbury (accepted)	1,940 13 0

For detached villa residence at Turnham Green, for Mr. W. H. Thomas. Mr. C. Sewell, architect. Quantities provided:—

Scott	£1,980 0 0
Wilson	1,836 10 0
Weston & Sons	1,830 0 0
Wright	1,787 0 0
Flaxman	1,745 0 0
Adamson & Son	1,727 0 0
Vigmore	1,660 10 0
Coates	1,641 0 0
Cowland	1,606 0 0
Perry Bros.	1,617 0 0
Waters	1,617 0 0
Whitlock	1,590 0 0

For rebuilding the Old White Horse Tavern, Bristol, for Mr. H. J. Reeve. Mr. C. Sewell, architect. Quantities provided:—

Scott	£1,987 0 0
Hill & Russell	2,000 0 0
Staines & Son	2,396 0 0
Cooper	2,350 0 0
Smith	2,338 0 0
Heaver & Coates	2,307 0 0
Perry Bros.	2,347 0 0
Waters (accepted)	2,347 0 0
Rose & Vernon	2,307 0 0

For the erection of the West London District School, at Ashford, Middlesex. Mr. H. H. Collier, architect. Quantities supplied by Messrs. Baines & Hunt and Mr. Griffiths:—

Merritt & Ashby	£27,965 0 0
Brass	55,590 0 0
Hill, Keddell, & Widdows	54,728 0 0
Crookett	52,900 0 0
Wright	52,900 0 0
Tongue	52,380 0 0
Nyes & Co.	52,460 0 0
Merritt & Ashby	52,460 0 0
Crabb & Vaughan	51,600 0 0
Capps & Bates	51,128 0 0
Hart	50,750 0 0
Gibson Bros.	49,918 0 0
Perry & Co.	49,770 0 0
Isaiah	49,360 0 0
Howard	49,090 0 0
Eden & Sons	48,998 0 0
Hill, Keddell, & Widdows	48,728 0 0
Kelly	48,455 0 0
Griffiths & Thargood	47,479 0 0
Kirk	46,994 0 0
Harris	46,500 0 0
Wright	46,473 0 0
Kelly Bros.	43,690 0 0
Bail & Sons (accepted)	42,960 0 0

For the erection of seven stone houses, Barkland-avenue, Peel-street, Nottingham, for Mr. George Abbott. Mr. J. Collyer, architect. Quantities supplied:—

Curtis (accepted)	£3,030 0 0
For extension to factory, Sherwood-street, Nottingham, for Mr. J. Collyer. Mr. J. Collyer, architect. Quantities supplied:—	
Waters	£720 0 0
Waters	609 0 0
Sherrin	672 0 0
Waters	609 0 0
Joley (accepted)	586 0 0

For the erection of a teacher's residence, attached to Oakley National School, Bishop's Cleeve, Mr. Alfred W. N. Burder, architect. Quantities not supplied:—

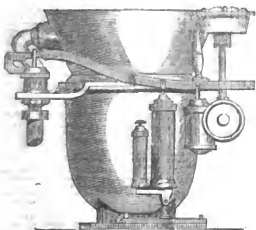
Repairs to School	
Glascock	£222 10 0
Brown (accepted)	205 10 0

For two pairs of semi-detached villa residences in Hove, near Mr. J. W. Keed, architect:—

Eden & Sons	£5,000 0 0
Eden & Sons	5,000 0 0
Parsons	5,767 0 0
Harris	5,767 0 0
Hyde	5,708 0 0
Whitlock	5,646 0 0
Eden & Sons	5,546 0 0
Carter & Sons	5,337 0 0

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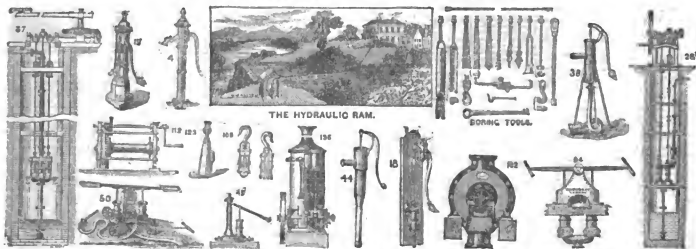
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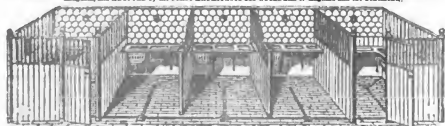
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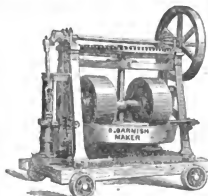


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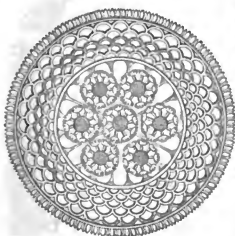
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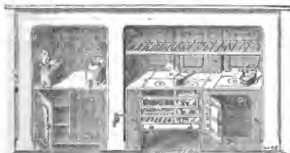


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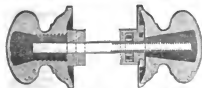
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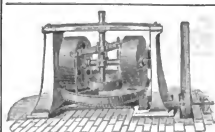


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VOL. XXVIII.—No. 1420.

The Sanitary Condition of Edinburgh in 1870.



E have once more walked through the wynds and closes, the broadways and the by-ways, and crept up, nearly on all-fours, a good number of the steep corrugated and slippery and sludgy defiles of the old town of Edinburgh. We have often seen Auld Reekie before, and it has often been our painful province to criticize somewhat severely its most wretched and deplorable sanitary condition. Within a few years various commendable improvements have taken place. Some new and improved dwellings have been erected for the accommodation of the working and small shop-keeping classes,

and two or three notorious rookeries have been pulled down to make way for this improvement; but the old town of Edinburgh, betwixt the lines of the High-street, the Canongate, and the Cowgate, with its extremities, the Grassmarket and the Westport, contains yet a solid and miserably-housed population. It would take too many lines of these columns to enumerate in detail the reeking alleys, slums, and tottering, slippery, and headlong, break-neck passages, which intersect the many landing and back streets in the direction we have indicated,—passages and alleys with noisome smells and accumulated heaps of filth. Rickety, dingy, dilapidated, and dismal dwellings by the hundred can still be seen and reckoned on any occasion in every quarter of the old city.

To view the bleak side of Edinburgh as well as its bright, it is necessary to dive into its dismal closes, and wind round its corkscrew stone staircases; to mount, still mount, up, still up, from flat to flat, to the sixth and seventh story,—to where the eradled and creeping bairns, or the poor decrepit crone, may be seen, indifferent to the life and bustle of the work-a-day world below on street and pavement. Truly in Edinburgh there are human entities perched aloft in inaccessible eyries, of whom their neighbours know absolutely nothing; and the saying "that one half of the world does not know how the other half lives," is sensibly applicable to them. We have visited them, we have seen their homes, we have examined their surroundings, and we must be forgiven if we draw the obvious conclusion which such a state of life warrants us to draw. The last was a hard winter in Edinburgh, and employment was very dull; for Edinburgh, it must be remembered, is unlike Glasgow: it does not possess many factories or foundries of sundry descriptions. It has a few foundries, which employ a small number of men, and the valiant or India-

rubber factories are the best open in the city for absorbing a large amount of the surplus male and female labour which exists. Here, in these factories, some hundreds of men, women, boys, and girls, are employed in the manufacture of an almost indescribable number of articles of a useful and ornamental character. It would be well if a few more factories were established of a similar description, for Edinburgh at present requires openings for waste labour.

The building trades may be said to be the only ones that are brisk, or will be brisk when the spring is farther advanced; several new buildings are in progress, terraces are laid out, and railway termini are undergoing metamorphoses. For instance, the Caledonian Railway Company have nearly completed their new station at the angle of the Lothian-road.

Off the High-street several improvements have taken place since 1864. One side of St. Mary's Wynd, a noted narrow gait sacred to Old Clo, has disappeared, and new houses, with shops, have been erected, conformably with the spirit of the Improvement Act of 1867, having been carried on under the patronage of Mr. William Chambers. A tablet in commemoration is inscribed over the doorway of the angle house. The houses are a vast improvement on the old edifices of the town. The stairs are wide and easy, and, of course, of stone, as mostly all the stairs in Edinburgh are. They are not of the old spiral fashion, but what we call dog-legged, and are easy of ascent. The rooms are somewhat roomy, to use a homely phrase. But these houses in St. Mary's Wynd do not meet the requirements of the working classes, nor can it be said that they were designed to do so. One side of St. Mary's Wynd is improved without doubt. The thoroughfare is wider and healthier; but the poor are not helped by good house-room and low rents in consequence. There are other improvements in connexion with the High-street under consideration, and houses are in course of demolition for the purpose. Around by that quarter of the town that looks out upon Salisbury Craigs (Arthur's Seat) several lines of new houses have been erected within these three or four years, and others are in course of incubation. These houses, although of a not very ornamental cast, are pretty fairly built, and are better ventilated. Their approaches, though steep, are not offensive, nor are the unsavoury smells which one finds in the heart of the city felt.

Edinburgh, though less silently and less markedly than London, is gradually extending itself, even beyond and upon its old frontiers, and twenty years hence the new portion of the old town will have outgrown its predecessor as much as the new town (the Princess-street side) has outgrown the old in good buildings during the last forty years. But at this point let us inquire, seriously, is it possible to improve the sanitary condition of the old town of Edinburgh? It is a difficult question to satisfactorily answer. During our visit we have penetrated the precincts of upwards of a hundred old Wynds, Closes, and Entries, and we have found them in as bad a condition, and the majority of them in a worse one than we did in 1864-5, or any time previously. Muck and filth of every kind were to be encountered, and unless a man possessed an india-rubber nostril that could shrink and dilate at pleasure, he could not escape the penalty of inhaling pervading odours. If life is to be seen in Auld Reekie, reeking filth and fumes must be waded through.

But we must say that the worst closes and wynds, and the greatest dinginess, desolation, and dirt exist in the closes off the High-street, the Cowgate, the Grassmarket, and the Westport. We are not writing from hearsay, but personal observation and examination. Discussions are going on in the Corporation about over-crowding of lodging-houses, and Baillie Miller, in the

Concill denies the soft impeachment, but another more outspoken member confirms the fact by offering to prove that over-crowding does exist, and he can put the Baillie's finger upon it. We can confirm the truth of this. Over-crowding exists in the Grassmarket, and the Westport, and in some other of the quarters which we have already enumerated.

We went in search of these lodging-houses, and found them. Poor speculators make a living by lodging their fellow worms, and as long as the sanitary condition of old Edinburgh remains as it is, there will be over-crowded lodgings, fever, cholera, plague, and penury. Only those who have made an extended visit through the old town can form an idea of what a horrible and rotten old carcass is contained within the outer skin of the Modern Athens.

Athens, eh? Yes, we must acknowledge that Edinburgh has buildings,—public and ecclesiastical,—and streets and picturesque eminences almost unequalled in the summer sun. She has wealth—she has beauty—she has good moral and physical attributes. She has great men,—men of science, lawyers, engineers, artists, churchmen, and others; but, alas! she has a diseased sanitary core. She has had a cancer for years, that must be cut out; for if ever a great epidemic should sweep over the northern capital, "Wo worth the day—wo worth the hour." She would not escape the effect of the blow for a half-century.

How is such an undesired casualty to be, if not in a manner prevented, at least lightened materially if it should occur? Simply by beginning at the right end, doing things in the right way, and putting the right men in the right place. This has not been done heretofore in Edinburgh. Of course, jobbery in connexion with corporate works is common, and Edinburgh is not an exception. It would be a wonder if the Scottish character were impervious, in the individual or the community, to the duty of providing for itself; therefore high personages, it is said, have taken especial care of themselves, while the public were left to take care of themselves. The sanitary condition of Edinburgh can be gradually improved, but it will be the work of two or three generations, as far as the old town is concerned.

The majority of the houses in the wynds and closes are unfit to live in. The majority of these entries are of a steep incline on their base line, and the staircases of these dwellings are in character with the outside passage. Their ascent is steep, darksome, and dangerous, and every "flat" comprises tenements, where the sunshine seldom enters, morning, noon, or evening. The breeze of heaven, God's light, and pure air, are unbidden visitants in these dreary and dingy closes.

To abolish these dark slums is desirable. You cannot at present, for whither are the working poor to go? There is no quarter where the dwellers in these places can find homes neat, healthy, and cheap, or even at all. There are interests, too, involved in these houses varied and curious. Take, for instance, any house in the leading or bye streets of the old town, and you will learn, perhaps, that the house has half a dozen landlords. Some may be factors, and others factotams; but the fact remains, they are managed for different landlords. In other places every man's house may be his castle; but in Edinburgh, though every landlord's "flat" may be his "flat," the house as a whole belongs to a good many other bodies besides himself. The poor tenant of a "flat," in fact, pays the taxes for his landlord, and these are allowed to be deducted from the rent. The tenants feel this hardship, and are loud in condemnation of a system that compels them to pay taxes in advance for their landlords, and then remain for six months before they are recompensed by deduction from the rent.

We have found instances in our peregrinations where one "flat" was owned by a half-dozen proprietors. For instance, it was devised to a family of six or eight children, brothers and sisters. The boquet gave them all the benefit of an identical interest. One could sell without the others' consent his sixth or eighth part to another landlord of another "flat," and then the five or seven brothers or sisters might sell their portions *separately*, or let them alone. Or, if they liked to clash with a mutual consent, they might dispose of the family property, and divide the price obtained for the "flat" among them.

We will relate another curious instance illustrative of how a duty devolved upon the owner of a top "flat," and how the system worked in relation to the interests of the other proprietors. A stipulation was inserted in the lease that the owner of a certain top "flat" (in the High-street) would agree to keep the roof in repair. The task of keeping a large roof in a state of repair would be no easy affair for a poor owner, who might live on a very small income. The owners of other flats underneath might prove disagreeable neighbors, if the roof leaked, and if water from gutters trickled along the outside walls, making their bedrooms damp, and injuring their chance of getting good tenants.

Built by building speculators in days past, a good portion of the house property in Edinburgh Old Town has undergone many changes, and has entered into the possession of various landlords. Many, if not all, the landlords of the house property in these old wynds and closes are now speculating on the chances that will exist of disposing of their bargains for greater bargains. Some have already amassed capital by the new improvements going on, which necessitated the demolition of portions of those old closes; but if future improvements advance only at the rate of the past, it will take a long period before Edinburgh can put in a decent sanitary appearance.

When Edinburgh is ramified with metropolitan railways, or even when one or two lines sweep the circuit of the city, better conditions will exist for leading to its purification. Building in Edinburgh is rather costly in one respect, as stone forms the principal material. The Edinburgh folk do not like the idea of brick structures, but of brick or concrete houses were erected by the score in Edinburgh, and let at a short rent. They would pay the speculator after a short time. Workmen's dwellings, built with brick, of suitable dimensions, and with the ordinary requirements that the improved dwellings recently erected in places throughout England afford, would be, in a measure, palaces compared with the wretched "flats" and the tenements and wynds of the High-street and the Cowgate.

By the opening of wide entries or streets off each side of the High-street and the Canongate, crossing the Cowgate, and brought up to a level by bridging the latter thoroughfare, further improvements would be made, and freer currents of air would be let into quarters which stood sorrowfully in need of it. Bridge-street, and its continuation in Nicholson-street from the foot of High-street, is an example of what is wanted. Radial arteries directed from the main trunk would circulate the life-blood of the city through channels that are all but lifeless and inert,—choked for want of pure air, and suffocated with chronic foulness and not easily removable filth.

Some of those very high houses in the old town but not water laid on in many of their flats; and, though the pressure is sufficient to raise it to the highest flat, many of the tenants are obliged to carry up the water they use in buckets, to the height of six stories, round and round a most tortuous spiral stair, where it requires one accustomed to every step and landing to ascend without accident. The poor are not half accommodated with water in Edinburgh.

The water-supply, which is now in the hands of the Corporation, who desire to improve the city, should be managed in a better way. The poor should not be obliged to come down five or six stories to fountains in the alleys and lanes for their water. As every flat is considered in the same sense as if it was a house, therefore, to every landing and every kitchen of each "flat" water should be laid on, and all the poor should be enabled to have it. Where there is not a good water-supply there must be accumulation of dirt; and where dirt exists disease is not far distant.

Edinburgh requires a good system of sanitary inspection. The city requires to be told off in divisions or districts; and sub-officers, acting under one supreme and responsible head, ought

to be stationed in suitable quarters of the town, and their allotted work mapped out for them. We confess that we hardly know what system at present the sanitary management of the city of Edinburgh is under. If a proper Board of Health existed something ought to be and would be expected at their hands. But it appears as if at the meetings of the Town Council, whenever sanitary matters are discussed, there is a great deal too much talk that ends in nothing or next to nothing, far repeated adjournment is only another method of shewing measures which are distasteful. Opposing members have their own hobbies, and as it takes months to reduce theories to practice, it need not be marvelled at that Edinburgh is still overcrowded in her wynds, and has a sickly constitution.

Edinburgh, of course, is fashionable and wealthy, and has good streets and squares in the modern or new city, but of these we are not speaking at present. The fashion and the equipages that roll through Prince-street and its surroundings do not ebb through the Cowgate or the Grass-market, nor do we believe they allow their nostrils to be offended by a sweep through the High-street, except when a desire arises for visiting the old Castle on the rock and the Royal Palace of Holyrood.

Royalty and fashion forewent the old historic portions of the city, and the old memorized spots sacred to king and Covenanter, Royalist and Jacobite, are tabooed, because a deadly asthma is in the heart of the Old Town, and an unburied cough is heard rattling in the throat of poor Auld Reekie.

Edinburgh requires a thorough and complete system of main drainage, sweeping down towards Leith, where the sewage might be utilized with effect for irrigation purposes, on adjacent districts, and for sale to the farmers inland. The present system of scavenging the city is a disgrace, and the morning view on the streets and alleys, of night soil and ash, is unworthy of modern Athens in the nineteenth century. Where shall the poor throw their dirt, ash, ashes, and smelly nasty sweepings? Not certainly on the footway of the wynds and closes, or in the channels of the open streets. There should be respectable bins or ashpits put up in certain quarters by the corporation to meet the requirements of the back-to-back dwellings in the closes, and no more new structures should be erected to Edinburgh of the original and barbarian type, which has disgraced, and is still disgracing the city, and making old Edinburgh a scandal to the empire.

We know it is difficult to do an expedition work of a sanitary kind in Edinburgh. We are not blind to the obstacles, nor ignorant of the manifold difficulties that link into each other. But all these things will grow small and appear puny when a hearty movement for thorough sanitary reforms is undertaken by the corporation of Edinburgh. The Water Trust, which comes under the complete control of the town council in May next, will be a step in the right direction; and we hope when it takes place, that not one attic, or cellar, or lane, alley, or close in Edinburgh will gasp for water, and gasp in vain.

We marvel very much, indeed, that the death-rate is not larger in the Old Town than it is, for the seeds of fever, cholera, and other human plagues exist, and certain atmospheric conditions only are necessary at any time to transform a city with wealth and learning into a diseased and pestilential city.

These may be gloomy observations, but they are fortified by incontrovertible data. The more is the pity.

ALBERT BRIDGE, BATTERSEA PARK.

The disadvantages which are allied with the erection of arrangements as to toll and non-toll paying bridges in the metropolis might well attract notice in connexion with the long contemplated erection of a new bridge at Chelsea. Few pronounced instances probably could be so well adduced in favour of the equity of the total abolition of tolls upon metropolitan bridges than those which may be found to be associated with this undertaking. The distance from the existing suspension bridge at Battersea to Battersea Park to Old Battersea Bridge, it may be true, would be scarcely likely to suggest the necessity of any intermediate erection. At the Surrey side the interval between the abutments of the two bridges which are already in existence is scarcely more than 1,700 yards; while on the Middlesex side that distance is exceeded

by about another hundred yards, due to the land curve formed by the River at Battersea Reach. The completion of Albert Bridge would accordingly render accessible to the public no less than three bridges within the limits which we have indicated. Apart, however, from the question as to the extent of over-riper accommodation that may be demanded at these points, there are circumstances which connect themselves with this particular project which would, in the opinion of many, in some measure justify the execution of a work which obviously has been long held in view. The expected improvement in the condition of house property in the neighbourhood, which it has been stated would be likely to result in opening up readier means of intercommunication across the river, could hardly, in fairness, be considered likely to follow upon so large a scale as circumstances would appear to render desirable. Speaking of Battersea alone, the extent of the erection of house property in that locality of late years, from a recent allusion to the subject in the House of Commons upon the question of the desirability of freeing the Eastern Chelsea Suspension Bridge from tolls, may be inferred from the statement that no less than 3,000 houses in that district are at present uninhabited. While dwelling upon this, which has come to be regarded as an important element in various proposals towards the possible redemption or abolition of tolls, it might be noted that the proportion of untenanted houses to which attention has been so prominently called in the case of Battersea, is by no means at this moment exclusively to be found in that part of the metropolis. In one ward alone of the parish of Camberwell at the present time no less than 950 houses are unoccupied; and it is alleged that, taking the entire district into consideration, a greater number of houses may be found untenanted in Camberwell than in Battersea. In some districts of Fenchurch and trade which has so long afflicted certain parts, that in one division of the metropolis alone there may be found at this moment no less than 10,000 eligible dwelling-houses uninhabited. Such incidents point out undeniably the grave results which cannot fail to reach certain sections of the community, in every instance of a protracted suspension of the tolls, as a consequence which is happily predicted the country is at length affording signs of recovery. Whether the erection of the proposed Albert Bridge would or would not operate in favour of the owners of household property in Battersea, it has been rendered more obvious perhaps than could have been wished that as a proprietary scheme it could have been more warmly supported in those localities which would be more likely to be interested. Other circumstances, however, which attach to this project, and to which we have alluded, are more or less of an official character; and while having confessedly prejudiced or delayed the undertaking as a private enterprise, but little intention would appear to have been declared towards remedying a situation of affairs with reference to which but little reason for discommodation might, from any point of view, be afforded.

The western extremity of Battersea Park, as may be well known, was planned with a special view towards the construction of a bridge. The general arrangements, or it might be said the defiguration of this portion of the park, has been ostensibly so subordinated to the erection of such a structure at this site, that as a consequence of any such intention acquiring further determinate signs of being realised, the formation of Albert-road might come to be regretted on many grounds.

The normal boundary of the park would appear not only to have been fruitlessly curtailed, but the adjacent land could scarcely be so well appropriated while the original design is held in abeyance or so tentatively proceeded with.

Should no readjustment of the land at this point be made, it might still be in vain to look forward to any official explanation as to the delay which has impaired or limited the intended utility of the park, involved considerable expenditure of the public money in the formation

of impracticable roads, and invited an incorporated body towards the prosecution of an apparently impossible enterprise, and one which, upon its original merits at least, appears to have lost so many of its former elements of attraction. Nor could it be but supposed to spring from gratuitous reticence on the part of any one to believe that, taking all the circumstances into consideration, any public, or perhaps it might equally be said, any private advantage could be still expected from an undertaking whose original shares of 10*l.*, fully paid up, have been publicly offered for sale in the open market for a sum of three pence per share. They may be some who will recognise that in all charity we abstain from further comments in this direction, and prepared to admit from late occurrences that no degree of prudence could be deemed excessive in venturing to trespass too far upon even the credulity of the public. The parties concerned, however, in the case which we have in view, might be said to have just and substantial grounds of complaint; and it is but reasonable we would hail with satisfaction any practical suggestions, with the view of restoring public confidence to a work of promising utility, that we would be inclined in any way to aid so desirable an object. From the circumstance of the tolls upon the existing Chelsea Suspension Bridge—which, unlike most of the other bridges along the Thames, is neither private nor corporate property, but in the hands of the Government—not being continuous, but relinquished in favour of the public when the facilities which such structures are intended to afford are most demanded, it may become apparent that but little encouragement may be derived in any supplementary accommodation that might be sought to be extended upon a speculative basis. It might recommend itself also as a matter open to consideration whether the modifications which may be attempted with a view of limiting the cost of the structure which was originally intended to be erected at Battersea may meet with that approval which could scarcely fail to be desired.

In the instance of the proposed new bridge at Wandsworth, where such a structure may be more needed, and with reference to the erection of which Parliamentary powers have long been granted, it has been found necessary to apply for further authority to reduce the cost of the undertaking. Although this may be practicable, it could in no way enhance the merits of the project, nor appear calculated to command so large a share of public support as could be wished. Such a policy could be refuted to the simple effect of suspending a veil across the river, with a locomotive basket attached, as was employed at Clifton prior to the erection of the Clifton Suspension Bridge. It may be accepted, however, as a further illustration of the difficulties which have to be encountered in the construction of a proprietary bridge, while it is in the power of certain authorities to relieve such structures from tolls, and the expediency of the abolition of tolls upon all metropolitan bridges, counts such frequent advocacy.

The Albert Bridge Act was obtained so long ago as the year 1864, with permissive but conditional powers to amalgamate with the Old Battersea Bridge Company or proprietors. The proposed arrangement was, we believe, to the effect that those interested in the old bridge should be enabled to a preference to the purchase of all deductions to the amount of 3,000*l.* per annum upon the united takings of the two bridges, assuming that the Albert Bridge had been erected within the time stipulated. The joint undertakings would then have merged into the single corporation of the Albert Bridge Company, upon which would have devolved the maintenance of the two bridges. The long-deferred erection of the new bridge, however, would appear to have rendered other arrangements desirable. From a report which was issued at a general meeting of shareholders, held at the Westminster Palace Hotel in January, 1866, it may be gathered that the company then congratulated themselves upon the satisfactory terms upon which the contract for the construction of the new bridge had been made; but considering the manner in which the work has since been proceeded with, it could scarcely be deemed imprudent should the shareholders seek for some further justification of the report. Seldom has any enterprise of similar character appeared to have made so irresistible a start. The official statement at the meeting to which we have referred was to the effect that her Majesty's Commissioners of Works had agreed

to convey to the company the land for the purposes of the bridge on the Surrey side for a merely nominal sum. The Metropolitan Board of Works had consented to construct their embankment wall in a line with the abutment of the bridge at Chrysie Walk, and form two approach roads, each 60 ft. wide, along the Embankment to the east and west of the bridge.

The Conservators of the River Thames had consented to the erection of a pier for the landing of passengers from steamboats immediately adjoining the bridge. The Metropolitan Railway Company were promoting a line in connection with their system from Kensington to Chelsea, passing by Chrysie Walk, and crossing the foot of Albert Bridge—a circumstance which was thought worthy of being included in the general statement. Beyond all, an effort had been made, we learn from a published report by a responsible party, to take the bridge and collect the tolls, including lighting and repairs, paying 6,500*l.* to the company per annum for twelve years—an offer which we are asked to believe was not only made, but accompanied by a recommendation to the shareholders not to accept it. It might be inferred from this, as well as from later occurrences, that a more conciliatory or accommodating body of shareholders it has seldom been the good fortune of many companies to attract. This concurrence of unheard-of felicities could scarcely have been improved upon save by gratuitous erection of the bridge by disinterested parties; and why in face of all these tributary encouragements the original design should come now to be impoverished or abandoned, it may well be inquired. It would be widely apart from what may be considered necessary to enter more at length upon such observations as certain incidents with which the project in view has been attended would appear to render but too well warranted. As we have already observed, we would more gladly hail any fair indication of the undertaking being carried to a successful termination, and it is in that view that we for the moment abstain from further reference to matters which, as subjects of public interest, might be well communicated.

THE VAUDEVILLE THEATRE, STRAND.

So many of the newspapers have given the official description of the theatre that has been erected on the site of 403 and 404, Strand (a few houses east of the Adelphi Theatre), that it is scarcely necessary for us to repeat the particulars. Briefly, however, the principal entrance is in the Strand, by a hall leading to the stalls, on a level with the Strand; and by a staircase, 6 ft. wide, to the balcony and boxes. The pit is approached by a separate corridor, 5 ft. wide, level with the Strand. The gallery entrance is in Lumley-court.

The auditorium consists of a balcony, the front forming a semicircle, opening out by curves into country boxes, and, in the centre, into the proscenium columns. Behind this, at a higher level, is the dress-circle tier. Above the upper circle is a spacious gallery. There are, on either side, between the balcony and the stage opening on the grand tier, three private boxes, divided by pillars having enriched capitals, and surmounted by semicircular arches, containing figure-subjects from *Midsummer Night's Dream* and *The Tempest*. In a perspective, on the pit level, are two more private boxes on each side. There are seats, it is stated, for 1,000 persons. Opening out from the first landing of the staircase is a refreshment saloon, with cloak-rooms contiguous; above this, and occupying the frontage towards the Strand, are rooms for the management offices, wardrobe-making rooms, and a spacious refreshment saloon for the gallery. The lighting of the auditorium is by one of "Strode's" sun-burners in the ceiling of the ceiling.

The stage is 30 ft. 6 in. in depth from the front lights to the back wall, with a dock for storing scenery. The width between walls is 41 ft. 1 in. the stage opening 23 ft. wide; and the height above is sufficient to take up scenery out of sight. The footlights, by Messrs. Strode, run downwards, the produce of the combustion being taken away in an iron cylinder running parallel with the front of the stage, and carried up in a flue in the main wall.

The coloured decorations have been well executed by Mr. George Gordon. They are principally on the flat, there being no raised ornament on the ceiling, or on the box fronts, except the upper and lower mouldings. The ceiling is divided into compartments with white

ornaments on a blue ground. The panels in the cove over the proscenium are of varied design, in colours, on a gray ground. The front of the balcony tier is ornamented in colour on a gold ground. The lunettes in the arabes over the private boxes (which remind the spectator of the little Charing-cross Theatre), have been painted by Mr. W. Phillips. The hangings for the boxes are of dark amber-coloured figured satin.

The Greek act-drap has been designed and painted by Mr. Gordon, the odd and wild figures in the foreground being by Mr. Alfred Thompson.

The general builder's work has been done by Mr. Hyde, and Mr. C. J. Phipps was the architect.

The theatre, which is in three heights only (the pit, the boxes, and the gallery), is advantageously lofty, and the seats in the boxes and the gallery are well raised one above another. So far as we could observe, there is scarcely a seat in the boxes from which the performances cannot be seen and heard, and this is no slight merit. Mr. Phipps has also produced an elegant *entree* before the curtain. We cannot speak so warmly of the arrangements behind, where, as in other theatres of the day jammed in amongst homes, the accommodation is unsatisfactory, and well calculated to lower the character of actors and actresses. We stretch no blame to the architect; it is a question of area; but we should be glad to find the erection of theatres under such public control as would enforce the provision of proper accommodation.

The house opened with a very agreeable little comedy by Mr. Andrew Halliday, called "Love or Money," well played by Miss Amy Fawcett, Miss Ada Cavendish, Mr. Geo. Halsey, Mr. H. J. Montague, Mr. H. Irving, and Mr. W. H. Stephens. Burlesque, unapologetically, is to find another home here. The example of which has been produced "Don Carlos, or the Infante in Arms," is one of the most senseless of its class, deficient alike in dramatic form and decent writing.

IVORY CARVING.

Our readers have heard that *camel* is onyx and in shell, and found part of the price list of the Art Union of London; and we now put in a plea on behalf of *camel* and other carvings in ivory.

Those who are familiar with the working of this exquisite material are aware that no other substance lends itself with such facility to the highest skill of the artist. Capable, on the one hand, of a breadth and largeness of treatment equal to that to be attained by such a wood-carver as Grinling Gibbons himself, it is unexcelled, on the other hand, of a microscopic delicacy of finish equal to that of the Greek gem-cutters, which may be combined with a boldness of relief, and shadow of undercutting, equal to those of the modelling of Ghiberti.

The chief defect of ivory as a material is its loss of colour by exposure to dirt or damp. This may be entirely prevented by proper care, and by exposure to light under glass. Under these conditions ivory is inferior to gems alone in durability, as metals are subject to oxidation, and wood to cracking by change of hygrometric condition. The most delicate *camel* of Wedgwood are coarse, when viewed under the magnifying glass, in comparison with *camel* in ivory. No well-carved capital of equal finish.

Ivory carving is not to be judged of by such productions as the rude little figures, the execution of which forms an industry at Dieppe. These are essentially wood toys, executed in a better material. Neither are the brooches, earrings, and other ornaments, now executed in London, to be considered as specimens of artistic work in ivory. The price at which they are sold is too low to allow of the exertion of artistic skill and taste worthy of the beauty of the material. A case of modern English carvings exhibited at South Kensington may be referred to as another example of inferior modern work in ivory.

On the other hand, the well-known set of six plaques, representing *amovio*, *goats*, *enfers*, and *viatic*, carved by the artist of the *Viatic* may be cited as an example of the bold broad style of carving for which ivory is eminently suitable. Of the *camel*, or gem-like style of work, it is difficult to name any publicly accessible example. Exquisite statuettes were produced, some thirty years ago, by machinery invented by Mr. Cheverton. But in this case the reduction, which made its allowance for the diminution of scale, revealed its merely mechanical mode of execution to the

critical and educated eye. Very recently a few modern French carvings of great beauty have been added to the collections at South Kensington.

The importance of offering some encouragement for the revival of one of the most charming branches of the sculptor's art, will become apparent to any one who should wish to sell, or in any way make use of, the public notice, a modern ivory carving, even if of a thoroughly artistic character. The first question with which he will be met is, "Is it antique?" The second, "Is it foreign?" If neither of these questions is answered in the affirmative, neither dealer nor consumer will place further at the object. Grace of design, purity of rendering, boldness or delicacy of touch, attract no admiration, if the work confesses a modern English origin. "There is no sale for objects of that kind," says the dealer. "I take no interest in any but antique," says the connoisseur. A ridiculous triptich, boasting a comical date, or a clumsy Lot, embracing a one-legged damsel, but attributed to a Flemish chisel, may command a hundred guineas, while an English work of art—deserving the title,—attracts no attention whatever. It will be a task worthy of the Art-Union of London to encourage, by more than words, the revival of this elegant art.

SOCIETY OF BRITISH ARTISTS.

The forty-seventh annual exhibition by this society now opens in the Suffolk-street galleries has two points of novelty, a collection of the paintings of the late Mr. F. Y. Horlstone, for thirty years their president, and two contributions from Royal Academicians, namely, a powerfully painted study of a head by Mr. F. Leighton, and a group in oil by Mr. Frieh. Amongst the works by the late president are (51) a "Portrait of the late Earl of Cavan," (52) "*Salus, Signori*," a portrait of a roguish Italian boy looking out of a wine-shop window; (175) "Columbus with his Crew in Matiny," a very animated and vigorous composition; (226) "Ereos," (227) "Italian Peasant Boys," (228) "Italian Boys of the Nineteenth Century," (229) "Columbus asking Alms at the Convent," (230) "The Moorish Girl," (231) "Italian Peasants Gambling," (238) "A Portrait Group," and (513) "The Venetian Page." They serve to show what many knew before, that Horlstone narrowly escaped being a great painter. Of late years, however, he got farther and farther away from the chance.

We are disposed to consider the whole collection as above the average, and we advise our readers to go and judge for themselves. It includes a considerable amount of mediocrity, but displays at the same time many more pictures that have expression and tell a story than usual, as well as a large number of excellent landscapes.

The exhibition comprises 969 paintings and drawings, and 15 pieces of sculpture. Amongst the latter we would especially point out a candlebram (1,000), executed in marble by Professor Steinhilber.

ASSERTED REMEDY FOR DAMP WALLS.

The value of bricks and mortar is well known; but they possess the disagreeable peculiarity of being very absorbent of moisture, so that in exposed situations, in wet weather, the usual results are damp walls. Stone, too, is liable to be, and indeed is, acted upon very injuriously by gaseous and other atmospheric impurities, which cause the corrosion and disintegration, unfortunately visible in some of our most prominent public buildings. There have been many remedies proposed from time to time, and there are now a number of inventors who, for the public professing to cure the evils of damp and decay. What their means are we do not now stay to specify, or to point out whether they have succeeded or failed. Our object is to notice the remedial measures adopted by Messrs. Gay & Co., of Alton, Hants, which seem to deserve attention. There are two remedies proposed; one, however, is visible, whilst the other is invisible. We will first notice the visible remedy, which is an impalpable paint or solution made in the various colours suitable to architectural purposes, and applied to the surface of the wall, which need to be protected with a brush in the ordinary way. It is alike applicable to brick, cement, stone,

wood, and iron, upon all of which it acts as a preservative from decay and the action of moisture. The surface presents a hard, enamelled appearance, which, it is asserted, is preserved for years. The solution dries very rapidly, so that three coats can be applied within an hour. It will not answer on new brickwork. We now come to the colouring process. The visible paint is applied in the ordinary way, and can be used by any one. The colourless waterproofing process, however, can only be executed by workmen specially instructed by the patentees. The process is termed "invisible," because, after its application, there is no perceptible change in the appearance of the surface to which it has been applied. It consists in dissolving a patented compound by heat, and, whilst in a liquid condition, in applying it externally to buildings of stone, brick, stucco, or other similar porous material, the face of which is also heated to receive it. The surface is thus permanently secured from damp, and decay is arrested at once. By the method of application the compound is forced some distance into the pores of the material treated, independently of and beyond the absorbent action of the pores themselves. The preservative substance combines with the structure of the material into which it enters, and by the partial exclusion of the air under the influence of heat, a degree of permanence is insured, the testimonials assert, which has not previously been attained. The chemical character of the preservative is such that its nature cannot change, being affected by neither acids nor alkalies, its action is lasting, and preventing decay is both mechanical and chemical. In applying it the air-space between the particles of the material treated is reduced by the forcing in of the compound, which enters the pores for some distance, and there remains mechanical in its character of temperature, no matter how rapid or how extreme. The pressure and action of the outer atmosphere are thus kept from the interior of the material, which in effect becomes enamelled and in a condition to permanently resist decay.

With regard to the merits of Messrs. Gay's patent solution, we gather from a number of testimonials before us that they have both been extensively used, and have proved perfectly successful. The strong expressions contained in these documents have led us to mention the process.

Seeing how numerous are cases which come under our notice of damp houses, especially where exposed to the south-westerly winds, we feel bound to call attention to whatever seems really likely to prove a remedy.

ON COMPETITION IN TRADE.

This subject was treated recently by Dr. W. B. Hodgson, at a meeting held under the auspices of the Social Science Association. In the discussion which followed,

Mr. Paterson said, as long as you kept to the haying and sowing system, competition might be true, but it seemed to him that there were other great laws to be considered. The socialists advocated the co-operative system, and he could mention two or three instances in which nationalistic competition worked very well. As to what had been referred to in the lecture on the supply of articles for the consumption of the inhabitants of London, he considered there was a great waste of labour in the distribution of these articles. Whole quarters of the metropolis were made hideous by great advertisements, and there was a tax upon all articles bought and sold, while they were of no use. It was as difficult to find an honest coat, an honest pair of boots, or an honest loaf, at a low price, as if there were no advertising. This was competition, not dishonest necessarily, but, nevertheless, a great evil. Competition, as it was, left a large portion of the people inadequately fed, clothed, and cared for. He did not lay the blame of this on the competitive system. He had on a former occasion insisted cases of individuals earning from 3s. to 4s. a week, which they had to eke out by taxes levied on their more fortunate brethren. There was a price on labour, and employers that women ought to work cheaper than men. Was this dishonest? It was productive of great evil, for it created a feeling among workmen to exclude women from certain kinds of work because they naturally feared the introduction of low wages. How was it that competition led to a vast proportion of labour at prices that would not support the labourers? There

was much stir about education, but in many families it was impossible to send the children to school, and to keep them there long enough to make any useful progress, because their labour was needed for the support of the family. Competition ought to be restricted by certain laws and customs: it had been so restricted, and sometimes it had been beneficial results. Children had been employed at the early age of twelve, and had not the Legislature interfered, the well-disposed employer would be compelled by competition to continue to employ this kind of labour. He would ask Dr. Hodgson to reconsider this question.

Mr. Wilson said political economy was the poetry of transfer, but it did not take into account the wickedness of the world. They were surrounded by difficulties because society had got hold of the good things. What was needed was co-operation, or reciprocity, or, in other words, the mutualism of realisation, all might be brought to bear for the restoration of freedom. There was nothing to hinder a person from selling an article at a higher price than he ought to, for none of us know really the value of a thing we had to buy. The man who gave 15 lb. of sugar for 1 lb. might go on for six months, or a year, and then find out that he had been badly, perhaps, to pay him 1 lb. There was also an instance lately of the introduction of a quantity of rotten salmon. We were, in fact, surrounded by a large organisation of determined enemies of the community, who made to pay their own prices, and co-operation could put an end to this, and enable the sufferers to buy free trade prices of goods, to set up a shop of their own, and get one man to sell to them instead of employing three at the same work. We must get rid of money, which was worshipped because it was the key of their citadel.

Mr. Wilson said that he had seen one of our working men, and thought what had been said down was far above their scope. He thought Dr. Hodgson deserved the thanks of working men for giving his thought to the subject, but he had not touched upon competition as they found it. He had told of the evils of competition, but remedy every evil. He thought there was not another commercial community which took such advantages, and played snob tricks, as in this country. As to advertising, he thought scarcely any person believed in the posters which were put up in so many places. What must be the state of sellers in general, when these advertisements sold adulterated articles. The lecturer had alluded to 5s. as the value of a book, but books which were of the most pernicious character were sold without any check. He did not mean to say men were not to try to sell cheaper than others, but they should be compelled to sell genuine and wholesome articles. In the competition with labour, capital could lose its gain for a year without inconvenience, while economic science condemned combination on the part of the workmen. While exposing the evils that existed, it would be well to enforce laws that would be productive of health and justice.

Mr. Peary said that competition was the cure for monopoly, and in some cases where monopolies existed, such as railways, rival companies had been permitted for the sake of competition; but in many cases these competing companies had amalgamated, and established monopolies in the construction of such questions of competition arose whether it was not desirable, in the interests of the community, that when there were certain enterprises which the country should have, and which from their nature must be monopolies, those monopolies should be in the hands of the public. There, in the case of the railways, many were now of the opinion that it would be for the interest of the community that the country should own the railways, because if that branch of enterprise competition could scarcely have fair play. Dr. Hodgson had said that competition would cure all our evils. All that he had said was that competition was productive of very great benefits. Mr. Safford had fallen into a fallacy in stating that prices were regulated by custom. No doubt you might buy a cigar in Regent-street for 1s., while you might be able to purchase one of as good quality near the Elephant and Castle for 6d. The prices of high rents and different circumstances of the place were to be considered. Mr. Paterson had spoken of unrestricted competition as producing a great waste of labour, and of the evils of placarding and of attractive fronts. He was about to propose to forbid all that. We prepared every day to see what was productive of no benefit to the great mass of the community, or

was it a system sapping the vitality of the community and ruining us? This fact had to be kept steadily in view, that the whole progress of modern civilisation was a progress from monopolies to free competition. Civilisation was nothing more nor less than the fall development of contract and the displacement of monopoly. In the days of Elizabeth exclusive trading rights had been granted to companies. Monopolies of this kind were the law even in England. The East India Company held a monopoly of the Eastern trade for centuries. In no town in England could a man set up in trade unless he were free of the guild or trading company which held the monopoly of the business. In those days one or two persons held a licence from the Crown, giving them the exclusive right to sell certain articles. Modern civilisation checked all these monopolies, and removed all trammels of this kind; and there was no doubt that all were now better off than at any previous period in history. There were many very badly off, but the proportion of these was smaller than it had ever been.

Lord Houghton, who was in the chair, said this course of lectures had been instituted, as he understood, for the purpose of presenting to a mixed audience certain elementary truths of political economy which it was supposed they did not fully comprehend, or, at least, did not act upon. One gentleman had denounced to the lecturer as being rather above the heads of the class to which he belonged, and as not taking sufficiently into account the circumstances of that class; but it should be remembered that it did not do more than lay down certain principles which were parts of the foundation of the science. One point on which people were wrong was in thinking that political economy was a theory of one man, or of any set of men. It was merely an explanation of the laws of society, which were as rigid and severe, and sometimes as hard and cruel, as the laws of nature itself, or as the laws of God, and which could not be altered or controllable, and to many unjust.

He did not think it was the object of anybody, in delivering this course of lectures, to make things better for them. All they could do was to lay these laws and principles before them, and to show them that, if they acted upon them, they would come to certain results; and if acted upon them, they would come to other results. Competition was not without its evils, but at least, they had to do was to diminish these by making it as just and as innocent as they could. The evils of competition had struck some men as being so cruel that they had said, "We will not have it any longer; we will have in its stead a law of sympathy and love." So had said of old the author of our Christian religion. But through all the centuries since competition had come on, despite all the lectures and sermons, and it would go on still. Those who worked against it tried to establish a world of sympathy and love, but we were forced to say that the attempt to apply those higher rules to the ordinary transactions of business had not succeeded. There had been a burst of this feeling on the outbreak of the French Revolution of 1789; but of all the various schools which had grown up from the ruins of competition, which of them had given the slightest hope of success? It had been truly urged that the system of competition could not be said to have acted badly or injuriously to mankind at all. It was not a theory, it was an imperative law of society; but as mankind had become better, the action of competition had been modified, and had taken an improved form. Among the Australian savages, for instance, the form of that knocking one another on the head. Here it was transferred to that of taking in by false weights, lying advertisements, and adulteration. Bad things, no doubt, but better. Political economy was no poetry, as one gentleman had said, but a science, and a very hard and painful science at times. He had read that day in the papers that a notable scheme of our American consuls, who, being struck with the paucity of native literature, had proposed to lay so heavy a tax upon all productions of English literature, that Americans should be forced to think and write for themselves. A hope had been expressed that a tax of 250 per cent. upon Shakespeare might prove prohibitive.

In the edifice, in reply, said it was a mischievous pretension to suppose that those who defended the principles which underlie all society defended also all the accidents of the time. They were supposed to defend low wages and starvation; but he would ask, how would you prevent this by altering the fundamental conditions of

society? How would you make people honest by preventing competition, or removing liberty? There was an enormous mass of evils which he could not explain, though he could mention two causes of social disturbance. There had been a great number of legislative interferences, and we were now suffering from many of the legislative blunders of our ancestors. When we had ascertained certain conditions, it was the most logical course to charge no evil upon the violation of these conditions, just as a physiologist considered diseases as caused by disobedience of natural laws, and by disturbances arising from the individual ignorance of mankind. He had no doubt that great harmony would arise if these laws were understood and acted upon generally. When the law interfered to prevent the selfishness of one man from injuring another, it might remove no enormous amount of evil. The use of short weights and measures, and the practice of adulteration, ought to be punished most severely. In practice, at present, these things were followed by a fine altogether inadequate; for the man who picked a pocket was (he thought) no honest man, compared with those men who thus pursued a course of robbing their neighbours; and these things should be put down.

ART MOVEMENTS IN NEW YORK.

ARCHITECTURE and its cognate arts, in the teeth of the progress and civilisation which are being developed in the first city of the United States, are at present at a very low ebb. There is a struggle with artistic aims; but it is only a struggle, resulting, for a while, in uncertainty and confusion of mind. Perhaps it may interest the general reader, and, at the same time, prove of assistance to those who are striving to advance art-education, if we view the latest efforts which the citizens of New York have felt themselves bound to make in increasing the embellishment and attractiveness of their magnificently-placed city.

During the autumn which has just passed, some of the leading residents have taken part at meetings which were summoned, in the first instance, at the Union League Club, for the establishment of an art museum. Each of these meetings included persons of influence and cultivation, who have seen with anxious eyes and a certain amount of self-reproach, the growth of the Department at South Kensington, and especially its steady and striking increase in the treasures of its art museum, and who accordingly attempted to declare their willingness to found a similar institution in their own city; so that both the decision to establish such an art museum and the steps to be taken are indubitably assured to all who recognise such a foundation as a popular need and a public benefit. This museum is to have direct and positive aims. It is not merely to be a lounge for the idle, or a means of amusement and sight-seeing to the casual frequenter. It will define and exhibit the early steps of art education, by the arrangement and classification of models of excellence, acknowledged by every one, artist or amateur, who takes pains to understand their value and significance; and it has been felt by those who have been most concerned in the origin of this important undertaking, that it has to supply and provide for the great want of proper artistic perception which is only too frequently shown by the wealthier classes and those who manifest the effects of an education in which art has had no voice.

New York may be said, singularly enough with its incessant enterprise, to be exceptionally unfortunate in not possessing citizens of public taste and intelligence sufficient to have founded a school of art long ago. A Peabody in art education, it would appear, is no more easily found than a Phoenix. Collectors of pictures and articles of virtue and luxurious display, exist by the thousand. But who sees their collections? And when they are seen, of what account, character, or instructional value are they? The Stewarts, Astors, and Vanderbilts, possessors of untold millions, are notorious either for a segregateness that would do honour to Daniel Dancer, or for an ostentatious squandering in architectural follies that display a vulgarity and a display of the simplest, rules of construction and beauty that as could hardly be matched elsewhere. The examples of opulence displayed in their public stores and so-called "palatial" residences, do but accustom the American eye to a false taste, and vitiate it with an ignorant satisfaction that are hard indeed to eradicate,

especially as these examples move the masses by their stupendous size and gigantism proportions. Such men, moreover, are frequently inclined to great public acts of generosity; but they lack concert and purpose to combine for the general good, even in what they undertake. When they contribute funds, it is but fair to allow that there is no mean parsimonious spirit prevailing in their donations. They give largely and freely, and like princes, but the gifts, it would seem, too frequently, more as a matter of ostentation than to help a great public want. With every respect for the value of the bequest just made by Mr. James Lenox, of his pictures and unrivalled library,—in which are some of the rarest Biblical treasures extant,—it may be asked why the collection was not added to the Department, which has already done much, and that much most worthily, for the Art Education of New York citizens. Why could not Mr. Lenox have incorporated his collections with the Art Museum which is to be located in the noble domains of the Central Park? This park is a public ornament of which any city might, indeed, be proud, and its features have been perfected by a skill and intelligence that anger well for any further development of the artistic aims of the nation, under whose charge it has come to its present attractiveness. And, by the way, England may be congratulated on the fact that this imperial work has mainly been the result of the genius and taste of two Englishmen,—Mr. Calvert Vaux and Mr. Jacob Wrey Mould, the one a pupil of the late Mr. Cottingham, and the other of Mr. Owen Jones. The principal attractions of this, the very lungs and breathing-place, and daily resort for all classes of citizens, from the dashing driver of the four-in-hand to the gamine, who is here provided with a special playground and cricket-field, may be summarised as follows. And our first observation justifies us in asserting that Nature has done so much for the park that in many instances the ground, with its wild beauty and the richness of its soft itself, and that there has been little or none of the "manufactured wilderness," such as may be seen in the Bois de Boulogne or at Alton Towers. Foot-paths, bridle-paths, and carriage roads, permeating and circulating the area of nearly 1,000 acres, are entirely distinct one from the other. In the centre rise the two large reservoirs of the Croton Water Works, which supply the city of New York with a pure unimpured flow of unimpeachably fresh water. The three lakes and the waterfalls are fed from this source. On the larger lake, over twenty acres in extent, an admirably-arranged service of pleasure-boats is established; and immediately beyond this lies "the Ramble," a secluded shrubbery, spread over some 100 acres, with walking ways and whistling lovers made with rustic paths and seats, and summer-houses, dotting the more picturesque elevations. During the winter there is a skating carnival on these lakes, visited by all classes. Noticeable, also, is the inception of a zoological collection which it is proposed to locate worthily on the western side of the park. Mr. Waterhouse Hawkins, of Sydenham railway, has been engaged to create the palaeontological department, and has already produced illustrations of some of the indigenous fossilized pre-Adamite animals belonging to the American continent. Two well-organized places of refreshment supplement fitly these popular grounds; there is also the nucleus of a botanical conservatory, on the model of the great palm-house at Kew, which the Commissioners have already taken to the discussion and functions of the edifice which it is rival on their side of the Atlantic. Although we have used the term "Commissioners," and the Board consists of seven members, it is no breach of confidence to assert that the whole credit of the official control of the park for the last eight years is to be unhesitatingly awarded to Mr. Andrew H. Green, formerly president of the Board, for not indifferently trusting to and confiding in the superior intelligence and knowledge of the able professional assistants with whom he has had to co-operate. Other blame there is none, and it is but fair to observe that he, perforce, it may be, the educating influences of the park itself, is gradually

rather equity, will always give "gold per quo". Ultimately, however, the works are carried out by the same architect, and from the same drawings delivered to him for that purpose. To whom do they belong?

HUNT, K. T.

PERMIT ME, Mr. Editor, to say that the profession in the provinces are watching with a keen anxiety the result of the conflict between the First Commissioner of Works and Mr. E. M. Barry.

As a provincial architect, I feel that should Mr. E. M. Barry determine to give up the drawings drawn up by Mr. Ayrton, a very natural and proper step, he is entitled to do so, and one which to a certain degree will entirely override the now acknowledged custom of the profession, that all drawings of a building are and do remain the sole property of the architect. I think the case might be viewed in this light; if, as stated in your quotation from the *Times*, all contractors are to be held responsible to the individual who has satisfied the architect's charges, then in equity might it not be said that the architect is the owner of the property of this individual, he can dispose of them in any way he may think fit; for example, sell them to some friend who would have the full advantage of the architect's abilities without paying one farthing to the architect. But, Mr. Editor, this cannot be said to be either justice or equity.

I do, therefore, trust that Mr. Barry shall feel it to be his duty to resist to the very end. Mr. Ayrton's demand were it for no other reason than that by according to Mr. Ayrton's claim a serious and positive injury would be done to the profession.

TASTE ON THE THAMES EMBANKMENT.

THE Metropolitan Board of Works, which possesses so much power, and which might do so much to guide public taste and evolve artistic feeling, strain at a gnat, but swallow a camel. This is illustrated in their doing, by what they have demanded, and what they have permitted, on the Thames Embankment.

At the Charing-cross Station of the Metropolitan District Railway the Metropolitan Board have exercised their powers of interference, and we dare say rightly. The station, it was supposed, would be unsightly, and they stopped the works. A compromise had been effected. The station was to be hidden by a screen wall, and that, again, is to be hidden by a triangular mound of earth, sown with grass or covered with turf. The Board have even ruled that only white bricks are to be used in the construction of the sewers; and not only so—the bricks are laid out and the shades assorted, so that there may be no violent contrast in the work which nobody is to see; and yet they intend to allow such a fine work as the Thames Embankment should be, to be damaged at its eastern end by tramway accommodation across the Embankment, permitted by the works at the bottom of the Whitefriars-street, which ought long since to have been removed. The Embankment will be degraded by having coal-ways, and coal-barges delivering at them, unless public opinion or a higher authority interpose to prevent this.

SCULPTURE AND ARCHITECTURE.

THIS current number of the *Fortnightly Review* contains an essay by Mr. F. T. Palgrave (originally delivered as a lecture at Cambridge) on "The Practical Law of Decorative Art," wherein occur some remarks on the decorative function of sculpture in connexion with architecture which are well worth the attention of some of our architects. Adopting the principle that accessory ornament should always be of subordinate interest to the whole work which it serves to decorate, Mr. Palgrave proceeds, with complete consistency, against the too lavish employment of mediocre sculpture in many modern buildings, resulting, as he says, in an expenditure totally disproportionate to the effect obtained.

"Among the three fine arts of design, sculpture is at once the most difficult and the most directly intellectual. It follows at once from this, that sculpture must be rarely employed, and employed to give the highest point of effect. Although, looking at the building as a whole, we may regard its sculpture as part of its ornament, yet the sculpture itself is, by the very conditions of the art, the most removed from the merely ornamental. It is a contradiction in fact, principle, and hence were to be followed by ruinously bad effect, to employ it profusely and to employ it decoratively. The sculpture there is absolutely no middle way between the good and the bad: it is a success or a failure. The most powerful means of giving beauty to a building is by the judicious use of sculpture. A figure is in itself an appeal to the mind; where, therefore, we discover a mere piece of ornament instead, we experience an aversive feeling. It is not simply neutral, it is positively injurious to the art of the building."

Upon these premises, Mr. Palgrave charges the architectural profession, alike of Medieval and of modern days, with having constantly designed as in all the good sculptures in the world had been the work of the sculptor. "We see altar-sccreens framed to hold fifty figures together; niches and pinnacles and pedestals between every window." And as from the diffi-

culty of the art it has been rare to find more than two or three efficient sculptors in a whole century, the result has been a quantity of mediocre sculpture on the façades of Gothic cathedrals, in a style which the modern revival has introduced again, from a mere sentimental admiration for all that belonged to the Medieval period. A friend to the Gothic architectural revival, Mr. Palgrave regards the accompanying revival of Gothic sculpture as doubly unfortunate!

"For not only are the modern buildings disgraced by a crowd of beings in crumpled folds, and in summary and unimpressive in form, but the peculiar artistic sentiment, the artistic of Gothic times (such as it was), being lost, the execution of the modern sculpture is far less the one genuine interest of their originals; they are an encumbrance to all familiar with good work, and lower the popular standard of sculpture, already low enough."

And even were all these of Phidian excellence of execution, yet it is to be remembered that all sculpture is no sculpture. The power of the art is limited in proportion to its intensity, and "to have little sentiment, but that little of first-rate quality," is the only safe rule for the architect.

We draw attention to these remarks, of which we have quoted the salient points, as the criticism of a thoughtful amateur, and worthy of the consideration of architects who are inclined to sin in sculpture. The doctrines laid down in the essay are generally such as will interest us new to most of our readers, but they will very well bear repetition.

BRICKLAYER FINED FOR NOT PARGETING FLUES.

WE hope the following will prove a warning.

At Wandsworth Police Court the other day, Thomas Maddock was summoned for a penalty on workmen, under sec. 45, for infringing one of the rules of the Building Act, sec. 22, cl. 4, by not "pargeting" flues. Mr. Hanson said the defendant was a bricklayer employed by Mr. Lond; he found that the flues of twelve houses in Livingstone-road, Battersea, had been carried up without being pargeted on the inside as the work proceeded. He said it was a novel proceeding, for there was little or no economy in not pargeting the inside of the flues. By not doing so it would probably prevent the smoke from rising through the chimneys, and become a source of annoyance to future tenants. Mr. Lond said he had told the defendant it would be better to have the flues pargeted, but he did not think it would prevent the smoke rising. He had built a number of houses, but he did not know whether the chimneys were pargeted. He had not received any complaints of smoky chimneys.—Mr. Hanson said he had inspected the other houses which Mr. Lond had built, and could speak to their being pargeted.—The Bench said he did not see the defendant at Court of Parliament.—Mr. Ingham said it was part of a system which prevailed of making buildings look substantial and correct, when in fact they were not. It was a most gigantic fraud upon persons who were foolish enough to buy houses so constructed. He had had to complain of masters, but now it was a workman who had scamped his work; and to mark his sense of it he should fine the defendant in the full penalty of 50s. and 2s. costs, or one month's imprisonment. The fine was paid.

MADELEY UNION WORKHOUSE COMPETITION.

WITH reference to some observations in our issue of the 9th, headed "Management of Competitions," we have received a letter from Messrs. Haddon, in which they say:

"That so far from having sent in a 'highly coloured perspective,' ours was listed entirely with facts, except a slight wash of neutral tint over a portion of the background. 'To have up' the landscape, as you say to the view; and this we do not conceive to be a departure from the instructions."

They give reasons, doubtless very good ones, for sending a larger sum than the other competitors (but this does not touch the point in question), and say that "the premission of the design was referred to three gentlemen, members of the board, of whom one is a retired architect, who, whilst in practice, had a very large experience in the construction of workhouses; another, a builder, who has carried out some extensive works under leading architects in different counties of England; the third, a gentleman, who, from having the management of important

manufacturing works in the neighbourhood, has in that position acquired a considerable degree of knowledge in building operations."

"Throughout the competition," they conclude, "we scrupulously adhered to the facts and honest principles, and if Mr. Griffiths can prove anything to the contrary, we shall be very willing to offer our position in his favour."

LINE OF FRONT: METROPOLITAN MANAGEMENT ACT.

Metropolitan Board of Works v. Abbott.—In this case, heard at the Law Courts of the Queen's Bench, before Mr. Justice Coleridge, Mr. Abbott, a builder, was summoned for erecting a dwelling-house, in contravention of the 98th section of the Metropolitan Management Act, 1862, by not leaving in front of such house a road of 20 ft. in width to the crown or centre.

It was stated that the house in question was situated at the corner of Blenheim-street and Pleasant-st., in Wandsworth, and fronting on Blenheim-street, which was a new street, formed by the section of the Board to a width of 40 ft. Pleasant-st. is an old way less than 8 ft. wide. Since the erection of the house in question, other buildings had been erected in Pleasant-st., and the Board had ordered the street partly under the jurisdiction of the Board, who had required the same to be widened in front of the new buildings. The contention of the Board was that the defendant, by erecting the house, was in contravention of the 98th section of the Act, as he had not left the full statutory width to Pleasant-st., in case the road at any time afterwards, or, in fact, as it was subsequently, brought under the jurisdiction of the Board.

The requirement is one of serious consequence to owners and builders of property, as it would place those dealing with properties at the corners of old streets at the point of any subsequent widening of the street, in the face of the objection, to have a considerable portion of their property confiscated and their buildings placed in a position of insecurity and the owners of property in the same street.

Mr. Reginald Ward appeared, as assistant solicitor to the Metropolitan Board of Works, in support of the summons; and Mr. Hooke, of the firm of Hooke, Kenrick, & Harrison, for the defendant. The Bench, after hearing the evidence and carefully examining the plans, deciding that there had been no offence under the Act, and that the house being built, fronting on Blenheim-street, within the line shown on the approved plan, the defendant had a right to erect this house, even though the result would be to leave a street on which the house fronted would still be left as an old street of lesser width than 40 ft. Summons dismissed.

ENGLISH CONVICT PRISONS.

THESE are the establishments where reformatory and remunerative labour can be best carried out, by reason of the longer terms of confinement. Great efforts are being made in this direction, and with much success, especially at Woking, where a variety of useful occupations are enforced; at Dartmoor, where waste land is reclaimed by convict labour, and 200 head of stock attended to; and Chatham, where many million bricks are made.

But at Chatham and Portland, although the prisoners are worked hard, their labour is very much wasted; the nominal cost of the work at Portland, as returned in the official reports, is very high—almost self-supporting indeed. But by the plain test of marketable value it is almost nil. What real public service would it be to quarry away even the whole peninsula of Portland, if the stones are not used for really useful purposes? Any amount of dockwork or masonry may be projected and accomplished without enriching the nation. The convicts at Portland work very hard, yet their labour is mere exertion rather than industry. And as to the real value of the "work" done, when done at all, is largely artificial and imaginary. An intelligent magistrate, after visiting Portland convict prison, remarked to the secretary of the Howard Association, that the work there (apart from the physical exertion required) is, as to its real value and utility, "mere child's play."

"WESTWARD, HO!"

WHERE does the flood of London humankind intend to stop? It seems to be bubbling up on all sides at the same time with concerted action, as if fed from some subterranean, central source, and this ever-flowing tide appears in the richness and strength of its quality to be rolling westward. Its waves are also in motion towards every point of the compass, but the most powerful surge set "Westward, Ho!" and westward it is accordingly. Many of us are old enough to remember the opening of the Suez Canal, and some seven-and-thirty years ago, and even later, when the Suez Cottaage was the solitary goal of Cockney pleasure-seekers—the ultima thule of London civilisation in that direction.

Looking over a plan of London of that period, we find a thin red line—"Proposed Railway from London to Birmingham." But that is not the line we have now. After passing Kensal-green it curved away to the north, crossed Kentish-town about a third of a mile beyond the Mother Red Cap, and terminated at what was then the tile-kilns, by the end of St. Paul's-road, York-road, King's-cross. Another line is a "Proposed Railway from London to Greenwich." The terminus was then intended to be in Church-street. The remaining line was—"Proposed Railway from London to Southampton," the terminus being at Nine Elms. The Greenwich line was the first metropolitan railway having its commencement in London, and it opened in the session of 1833, and opened for traffic on December 26 ("Boxing-day"), 1839. It was partially opened to Deptford in 1836. The "London and Birmingham" Company also obtained their Act in 1833, and the line was opened on the 17th of September, 1838. It was a grand affair, the opening, and much was made of the directors' special train running the distance from Euston to Birmingham, 113 miles, in four hours fourteen minutes; and the second train of 200 passengers, only occupying six hours! The South-Western Company obtained their Act in 1833, and the line was opened on the 1st of May, 1840. These were all the lines that appeared on the "New Plan of London," published in 1832. What a different aspect a map of the metropolis presents at this day! What would London do now without railways? And yet it is not much over thirty years, barely a single generation, since there was no such means of conveyance for us here! What would become of the immense holiday crowds who are regularly whirled over the country, fifty miles and back, in a single day, at eight o'clock, at a single shilling included, if the railways were suddenly to "shut up shop"?

In the quarter of London to which we are now more especially referring, we had, away in the fields, St. John's-wood Farm, a length of Abbey and Wellington roads, uncommenced, as the structure would say, by the Army and Barracks. The baneful Finchley-road shook hands with "Life in London" at the Swiss Cottage tavern door, and there met town and country. All before you, and around you, to a quadrant of the compass, were fields, gardens, and farms, with breezy Hampstead up the London road, and the pleasant village of Kilburn away on the left. We are not going into any historical sketch of the neighbourhood, the Northern Heights of London having already had ample justice done them by a much abler hand, but we are going to glance at the progress of building in this direction.

If the reader will look at a suburban map of the metropolis, he will take within his view a large tract of undulating land lying between the Finchley and Edgware roads. Every one knows where the Edgware-road is, but the Finchley is not equally understood. The reader will start from the Primrose-hill side of Regent's Park, and go up Avenue-road, a continuation in the same direction will bring him to what was formerly called the Marylebone-road, and a mile or so further on the Finchley-road began. But all that is altered. There is no "Marylebone" road in raising direction now. Avenue-road has swallowed it up as far as the toll-bar, whilst Finchley-road has, by way of compensation to the other fork, been pulled down to the Eyre Arms tavern. All suburban pedestrians of twenty years' standing will remember Belaise Park and Belaise-lane, going from the west up to Hampstead. But all that is changed now. Belaise Park and lane have become Belaise-square, Belaise Park-avenue, Belaise Park-road, and other roads, covered with goodly houses wherein the well-to-do of the City and the town rest in the heat of the day, after their day's labour and their double ride of that valuable, or rather invaluable, convenience, the Metropolitan and St. John's Wood Railway.

Here let us step on one side for a moment to ask a question or two about this said railway. It is a dear little thing, but very small, extending only from Baker-street to the Swiss Cottage, some two miles or so. Indeed, a factions friend of ours has composed a jingling ditty, which he sings as he rides, with the chorus of "Our own Swiss Cottage Line." There is a junction with the "Underground" proper at Baker-street; but from some cause or other, of those mysterious reasons which the wisdom of railway management so ably contrives towards the diminution of railway dividends, that junction is

never used by the St. John's Wood line. We have heard it stated, though surely it must have been ironically, that the Underground might have it that the Swiss-Cottage line, the object to being carried straight into the City without a break; that, as things are now, they stop at Baker-street, have the pleasure of running along the platform, a couple of flights of steps, across the next line, and down stairs again to get into the next train; whereas if their own train ran right through, such a source of pleasure as that which we have named would be entirely knocked on the head. This the Swiss-Cottagers broadly and emphatically deny. They say that the big line is a big bully, and, like all belated victors, it is little likely to give one the chance to get on in the world. In the meantime the public, about whose convenience Boards of Directors are all so anxious, when waiting anything from Parliament, are made to suffer at Baker-street. If any higher power in the realm, that the management of railways into its hands, let us hope that it will not be long in finding a solution of such "tremendous" difficulties as that of the Baker-street junction.

Of the future of this wee little line we cannot speak with confidence; but, as to what will conduce to its prosperity and further public convenience, we are very certain. A scheme was deposited this session to carry it about a mile in a westerly direction, namely, from the Swiss-Cottage Station over to Kilburn, at the end of Willesden-lane. This, with an addendum, is the very best thing that could happen to it; that addendum is a thorough route, without break, to Moorgate-street. Public convenience demands this concession, and public convenience will not remain long without it, because it will pay well. There is very little doubt but that a Hampstead branch, and a Kilburn one, with either a free country, or a direct to Moorgate-street, or a Charing-cross extension, would give the convenient little line plenty to do and a most profitable return. Failing the realisation of either of the projects mentioned, the next best thing for the residents in that suburb will be an amalgamation with the Midland in the Finchley-road. This arrangement would give the way to the Midland ultra-Metropolitan system; and, as the latter is a powerful company, and has running powers on the Underground already, the difficulty would be solved at once. The City and St. John's Wood line could take all the Midland suburban traffic off its hands, and pass Kentish-lane, and run right down to Moorgate-street.

The strip of country between the Finchley-road and Kilburn is very pleasant, as well as very healthy. The contour is of an undulating character, well wooded, and the atmosphere remarkably clear. The landscape, fieldwards, is studded with the residences of the wealthy, and hundreds of the semi-detached villa community are daily taking root in the soil. Whilst they are very much pleased with the means of transit that exist, the great desire is for free railway locomotion. We visited it on two consecutive Sunday afternoons, and notwithstanding, as the song says, that

"The wind from the northward blew keenly,"

the roads were alive with groups of people, who had come up by the Swiss-Cottage line to take in their weekly stock of crisp, invigorating fresh air. At the junction of the Finchley-road and West End-lane, at the top of the hill from the Cook and Hoop Tavern, a very large mansion is in the hands of the finisiers. There are no pretensions to architecture shown in this building, but it appears to be substantially built, has large bay windows, and seems very commodious. Beyond that, further up the Finchley-road, on the confines of Hampstead Heath, other structures may be seen in various stages of progress. Around, westward, the hills are allgorous, rising upon rock, indicating building land to be let.

Looking across the valley in the direction of Kilburn, stakes in lines are driven into the earth, marking the outline of future "roads," "avenues," "terraces," and so on.

Pursuing our way homewards down West-end-lane, we find that they have not begun to move much there as yet; but, after crossing the two railway bridges, to the east of which the Midland Railway passes under the Hampstead and City Junction Lines, we come upon the outposts of advancing London. To the east and west, the roads are being made, and the eastern one will terminate in the Finchley-road, and the western one in the Edgware-road. When they are finished, they will, wonderful to

say, form the completing links in the great chain of suburban road communication, that will tie together the whole of the wide area, northern side of London, from Hainbury in the east, to Kilburn, in the far west. The eastern half of the new thoroughfare has not been as yet christened; it was our old friend Gipsy-lane; but the western one has been called "Nicoll-road." From what can be judged of it at present, it will be nearly a mile long. The broad, black, white-lettered boards are up, and, already, close to the lane, the ground is cleared between this new road and the railway, which runs parallel to it, and the plots for the Londoners' envious-sugary, the suburban semi-detached villas, are rapidly discerned. At the Kilburn end, several houses are up and inhabited, and others are in process of erection.

"Where will London end?" we said to a respectable-looking man who was surveying the situation, like ourselves, and with a very suspicious brick-and-mortar appearance.

"Goodness knows," was his reply. "Building plots are snapped up as if they were so many gold nuggets. You go to-day, and all but settle; only you think that you'll consider for a day or two. By the time that you have made up your mind, some early bird has dropped down at the last agency, and snatched up the morsels that you had set your heart upon."

Resuming the walk, we came upon a pile of building on the western side of the lane that is always sure to arrest the attention of the wayfarer. It is a long, red brick structure in the Old English Manor-house style. The rear front is towards the lane, and the gabling has a pleasant effect after so much of the commonplace town type that one sees around the metropolis. This is Oaklands Hall, the seat of Mr. Donald Nicoll, one of the magistrates of the County, and a well-known member of the mercantile circles. He built the hall about ten years ago, all in the fields, and now the railway station is about to sit down under the shadow of the Oaklands' vine and fig-tree, bricks and mortar are pushing their trenches towards its porch, and on all sides; and the house will be mercifully surrounded and beleaguered by the restless garrilla villa, detached and semi-detached. The owner, if he would be alone, must bask himself to the distant wide of some unknown, undiscoverable country; far away from the incursions of the ever-building white man, where the trowel of the bricklayer is never heard, and the Celtic hodman crouch not.

But, here we are at the top of the Abbey-road, the lamp-lighter is running along, and—we are in town again!

POST AND PAN HOUSES.

In the work on "Picturesque Architecture," reviewed in our Number for April 9th, Mr. Richardson adopts the expression "post and pan" in reference to the ordinary timber and plaster construction; an expression which some parts of the country, though not now, as far as we know, in general use anywhere. Mr. Richardson's theory as to the meaning of the word "pan" in this connection appears to us questionable. He takes "pan" as synonymous in Lancashire with "beam," and "post" and "pan" as representing respectively the uprights and cross-pieces of the carpentry. The only fact we can ascertain in favour of this is that in parts of Lancashire and Staffordshire a "parlin" is called a "pan," but it is quite possible that this is a corruption by contraction; and the statement that "pan" is historically used for "beam" in Lancashire, and that the latter word is unknown in that county, is an error. It is only right to say that Mr. Richardson gives various other theories as to the word. We have little doubt that "pan" refers to interstices between the carpentry, and that it is identical with the "pan" in "pan and girt," given in the best French dictionary to which we have been able to refer as "*partie considerable d'un robe, d'un manteau*," and in its secondary meaning "*part d'un mer, d'une des faces d'un ouvrage de menuiserie*;" and again "*pan de bois*"—plastered or mud wall, which hangs up very close to the mark. It may even be short for "post and panel."

If Mr. Richardson tures to "pane" in the "Glossary of Architecture," he will find we are not alone in our view. It is there given "Pane (Fr. *pan*), an old term formerly used in reference to various parts of a building, such as the side of a tower, turret, spire, &c., which were said to be of four, eight, &c. pannes, according to the number of their sides. It was applied to the

lights of windows, in which sense it is still retained, and also to the spaces between timbers in wooden partitions, &c.*

Whoever is aware of the close intermingling of French words and expressions with English some centuries back, in the Chaucerian and pre-Chaucerian period, can have little doubt that the French and English "pan" or "pane" are the same word originally.

"To pan" was a verb at one time current in England, meaning to join or close together; so that an enclosure, when the spaces between the uprights had been filled in with plaster or brick-work, might have been termed "panned." In a somewhat obscure proverb,—"Weal and woman cannot pan, but woe and woman can," the word is taken to mean "join or agree."

We add to the illustrations of the work "Design for a Garden Seat" (No. 31), and a view of a "Triangular Lodge" (No. 10), erected in an ancient park in Kent, both which are mentioned in our notice of the book.*

THE CASTLE OF COBURG, GERMANY.

The charming little town of Coburg is well known by name to Englishmen from its connexion with the early history of the late Prince Consort, and a visit to this interesting and beautiful place will soon lead one to understand the affection with which it was regarded by the Prince.

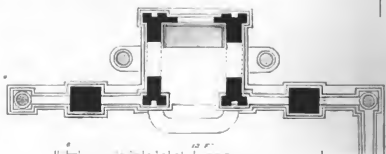
The greatest charm of Coburg is its romantic situation. It occupies the centre of a kind of "amphitheatre," surrounded by beautifully wooded hills, one of the most important of which is crowned with the picturesque and interesting castle.

The town itself consists chiefly of two long streets running at right angles to one another, and where they cross is a large market-place. Originally there were two walls surrounding the town, but the gates alone remain. There are four churches, the chief of which, called the Pfarr Church, is a fine building, consisting of a nave and aisles and an apse, and at the west end are two towers, one crowned with a lofty bulb-shaped spire of slate. There is a fine western porch, over which is a rather singular apse (a most remarkable feature in this position). It is difficult to understand what could have been the original use of this apse. It now contains the organ, but from the fact of its having large windows in each face, it is quite certain that it was intended for other purposes, and was probably used as a chapel.

The Bathhaus is an interesting building, of the latter part of the sixteenth century, with two good oriel windows at the angles. In the centre of the "markt-platz," in front of the Bathhaus, is a fine modern statue of the late Prince Consort, erected at the cost of her Majesty the Queen. Not far from the "markt-platz" is the schloss, or modern palace of the Dukes of Coburg. Some portions of this edifice date from the earlier part of the seventeenth century, but the greater portion is not earlier than the present century. There is a charming park attached to this schloss, extending for several miles along the valley, and enclosing the hill upon which stands the ancient Castle or "Veste" of Coburg. This is an interesting building, in a very perfect condition, consisting of an outer circle of walls or rampart, and two inner courts. A portion of the principal court is represented in our engraving. It is, perhaps, one of the most elaborate and interesting examples of ancient timber construction in existence. It is composed entirely of oak, and all the carving is most elaborately executed, and is in a beautiful state of preservation. The interior of this portion of the castle at Coburg is as remarkable and beautiful as the exterior; but of this we may have to speak on another occasion.

Some time ago we found it our duty to criticize rather severely the new timber buildings being erected in New Zealand, and we condemned strongly the practice of erecting timber structures in imitation of stone ones. The specimen of a timber building which we now give offers our New Zealand friends an example which they will do well to study; for in addition to being quite as dignified and elaborate as they can possibly require, it is thoroughly structural and substantial, and would not cost half as much money or labour as the pretentious shams that our colonial friends are now erecting.

PICTURESQUE ARCHITECTURE.

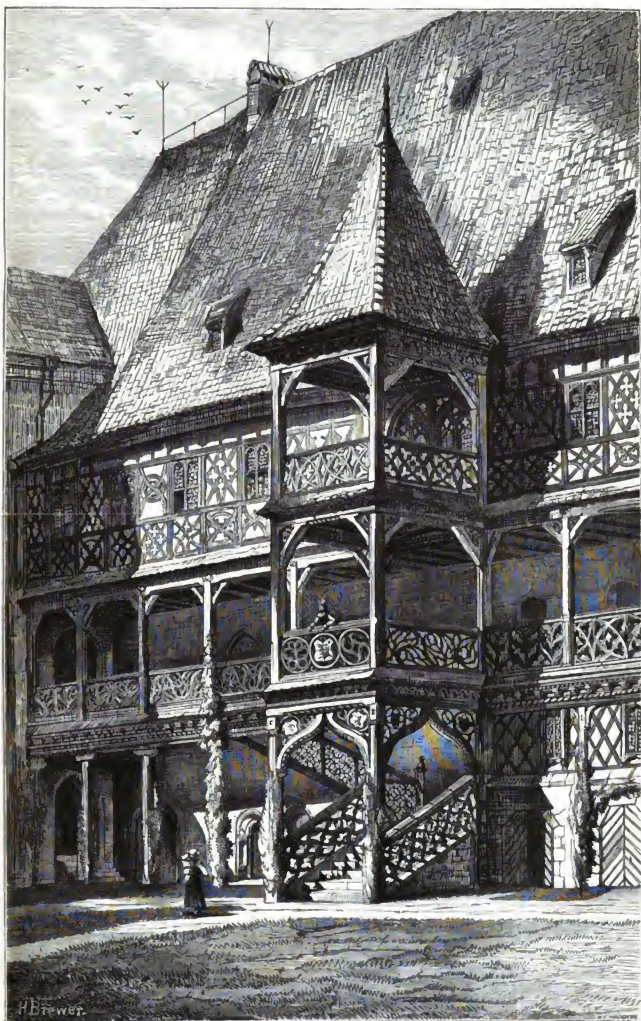


A Garden Seat.—Elevation and Plan.

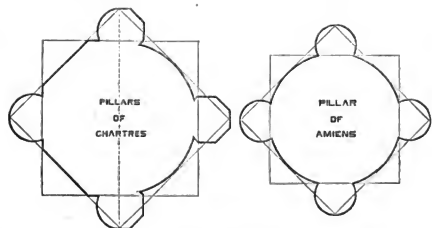
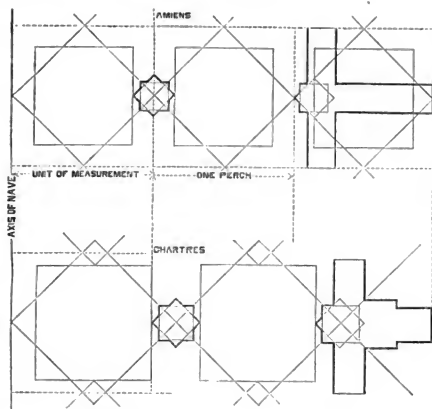


A Park Lodge, on Triangular Plot of Ground.

* See p. 377, ante.



THE CASTLE OF COBURG: INNER COURT.—ANCIENT TIMBER CONSTRUCTION.



GEOMETRICAL PROPORTIONS IN ARCHITECTURE.

GEOMETRICAL PROPORTIONS IN ARCHITECTURE.

IN December last, a correspondent of the *Builder*, in an article entitled, "Symmetry in reference to sound," suggested that "by using the square and its diagonal" we should have a system of proportion, "in which the dimensions bear a geometrical relation to one another." Mr. Cressy, in his "Encyclopædia," has given numerous examples of proportions deduced from the square and the cube, but he appears to have overlooked one use which the architects of the Middle Ages constantly made of the diagonal. He shows that the nave of the great cathedral, at Amiens, is contained within a cube, and that the proportions of all its principal parts are determined by dividing the whole cube into 216 smaller ones ($6 \times 6 \times 6 = 216$), each one of which measures 1 French perch, or 23½ (23.462) English feet. He then assigns 2.716 of a perch to the diameter of the pillars.

This arbitrary method of determining the dimensions of so important a feature has not the geometrical character prevailing in all pointed architecture. But if, within each of the 36 squares of the plan, two squares crossing each other diagonally be inscribed, measuring 23.45 ft. on the diagonal, or 16.66 ft. on the side, the difference between the diagonal and the side

(6.66 ft.) will be the proper diameter of the pillars, which Mr. Cressy says vary from 6.70 ft. to 7.17 ft. By the same diagram we have for the clear breadth of the nave, 42.04 ft., and of the aisle, 20.02 ft., or very nearly the figures given by Mr. Winkles, — 39.75 + 7.17 = 46.92 ft., or 2 units as breadth between centres of pillars.

At Chartres the nave is wider, or 2 units in the clear, and the aisle narrower than at Amiens, but the proportions are derived from a similar diagram. The *Builder*, in vol. xvii, 1859, page 706, gives as the breadth of the nave from centres of columns, 16 m. 40 c. The diagonal of the square is therefore 8 m. 20 c., or 26.90 ft., and the side is 5 m. 80 c., or 19.03 ft., the difference, 2 m. 40 c., or 7.87 ft., being the proper diameter of the pillars. By the diagram the nave, in the clear, will be 14 m., or 45.92 ft., and the aisle 5 m. 80 c., or 19.03 ft. These dimensions correspond exactly with the scale and drawing in the *Builder*, page 712, and with the figures of Mr. Winkles.

It will be observed that at Chartres the breadth of the nave is twice the breadth of the aisle, measuring from centres of pillars; while at Amiens, the same relation exists, if the measurements be taken in the clear.

At Chartres, the perch or unit of measurement seems to have been about 22.95 ft. long, or somewhat shorter than the one used at Amiens;

but in Angers Cathedral we find both dimensions and proportions too similar to those of Chartres to have been accidental. M. Felix de Verneille ("L'Architecture Byzantine en France," p. 233) says, "Elle (la nef) a 16 m. 40 c. entre les murs opposés; 14 m. et plus de colonnes à colonnes." And it is a similar diagram which, at Amiens and at Chartres, determines the plan of the pillars and the proportions of the shafts. The central cylinder is inscribed within a square, the diagonal of which is equal to the whole diameter of the pillar, while the diameter of the subordinate shafts is the difference between the side of the square and its diagonal.

Other examples of the use of these crossed squares might be pointed out, as well as their application to sections, but it would require many drawings to go fully into the subject. The figure was in general use during the Middle Ages, and will, I believe, be found to be the key to most, if not all, of the plans of the great ecclesiastical structures of the thirteenth and fourteenth centuries, although some have been misled, by an accidental coincidence of measures, to suppose the equilateral triangle to have been used as a guide to harmonious proportions. Hiram and Solomon, Ezekiel and Pythagoras, Iotinus and Vitruvius, all knew the use of the square and the cube, and the architects of the Middle Ages did not disdain to follow in their footsteps." W. RUSSELL WEST.

Philadelphia.

"RECENT TRAVELS IN ASIA MINOR."

IN the very interesting review of Dr. Van Lennep's travels, in our issue of the 16th inst., remarking on the "Temple of Augustus" at Angora, you state that you "do not agree with Dr. Van Lennep in the supposition that the yellow tint observable on the marble there and at the Parthenon arises from the fact that the surface has been gilt; but you are of opinion that it has been toned down by a coating of yellow encaustic. . ."

Allow me to suggest another reason for the appearance he mentions.

I think it will be found on examination that the stone in these ruins called marble (carbonate of lime) is really alabaster or gypsum (sulphate of lime) of which rock there are to my knowledge several ancient quarries in Asia Minor, and that the yellow coating is the effect of atmospheric influences during a very long period.

The ancient alabaster quarries are all coated in like manner, and the stone would not be recognised as crystalline in structure from its outward appearance.

With regard to the half-finished bust carved in the face of Mount Sipylus, it surely could not have represented any other than Niobe, since the time when the mountain was first called by the name of one of her sons. The figure does not exactly overlook the town of Magnesia, but is very appropriately located above the hot springs at Khasserje Calvé, about three miles to the east of that town. Thus the "marble" sheds tears, — and hot tears, — even now. There are two copious hot springs from this part of Sipylus.

Your quotation from Pausanias would, I think, imply that, if the bust were then carved, he never saw it; for at present it is barely perceptible from the foot of the rock. But he retired to a distance where he could observe the "whole contour" of the mountain, and therein recognised, or thought he recognised, "a woman weeping and sad." May it not be possible that some one, more matter of fact than Pausanias, knowing the legend, but not recognising the "sad woman," caused this half-finished statue to be commenced in the rock above Niobe's tears (the hot springs), and left it uncompleted in consequence of the inappropriate nature of the stone selected. With regard to the "masses of rock which fall from the cliff," the long preservation of the statue, as well as of the entrances to several excavated chambers at the base of the mountain, which is principally composed of a very hard rock, above the disintegration to have been unusually little.

The construction of railways in this part of Asia Minor will no doubt cause the discovery of many important antiquities; and in a short time when the Cassaba Railway is extended to Sardis, I hope to be able to furnish

* In pursuing this often-reverted subject reference may be usefully made to the works of Mr. W. F. Griffith, F.S.A. — &c.

you with some very interesting information with regard to the lakes and other ancient public works which have evidently been once extant in the precincts of the ancient capital of Lydia.

CHARLES R. ADYNS,
Consulting Engineer of the Smyrna and
Cassaba Railway.

SOUND AN ALARM!!!

JEWELLERS tradesmen are in great perturbation for the safety of their valuable stock: the usual precautions of "iron-clad" shops are now surmounted by our "engineering burglars." Permit me, Mr. Editor, to "spring a mine," or rather let them do it when they attempt to breach a castle (i.e., crack a crib).

Let an upright board be placed next to the window; the slightest touch of any boring instrument would cause it to fall, to ignite a taper, turn on and light gas-jets, fire a pistol, and ring bells in bedrooms, — simple, self-acting, and efficacious. It is a game of chance, they are after the "pauze," so it is our duty to checkmate them. R. T.

SCHEDULE OF CHARGES ADOPED BY THE AMERICAN INSTITUTE OF ARCHITECTS.

The following schedule has been issued by the American Institute of Architects:—

For All Professional Services (including Superintendence),
5 per cent. upon the cost of the work.

Partial Service as follows:—

For Preliminary Studies 1 per cent.
For Preliminary Studies, General Drawings, and Specifications 2½ per cent.
For Preliminary Studies, General Drawings, Details, and Specifications 3½ per cent.
For Stores, 3 per cent. upon the cost, divided in the above ratio.

For works that cost less than 5,000 dol., or for monumental and decorative work, and designs for furniture—a special rate in excess of the above.

For alterations and additions—an additional charge to be made for surveys and measurements.

Necessary travelling expenses to be paid by the client.

The architect's payments are successively due as his work is completed, in the order of the above classifications.

Until an actual estimate is received, the charges are based upon the proposed cost of the works, and the payments are received as instalments of the entire fee, which is based upon the actual cost.

Drawings, as instruments of service, are the property of the architect.

RICHAUD URSOIN, President.
P. B. WIGHT, Secretary.

THE NEW BUILDINGS BILL.

Sir,—This Act, in licensing wooden erections is taking a very dangerous step, in a wrong direction.

Practically, no Act could ever work that recognised such erections: it would open the door to numberless evasion and misconceptions. These could be indefinitely added to or altered, small shops built, to which stores would be added long after completion of work, would soon create dangerous structures.

There is no *vid medi*: either wooden buildings are right or wrong. A SERVITOR.

NEWTON MARKET COMPETITION.

Sir,—Whatever Mr. Cheddigh may wish in defence of the local Board's decision in this matter, it is notorious about here that a scandalous piece of jobbery has been perpetrated, as the enclosed cutting from the *Western Morning News* will go far to show. Mr. Rowell, one of the members of the Board, and a professional architect, denied it any day to protest against the decision, as an insult to his profession, as well as a disgrace to the Board.

Of the plans themselves, the local and the better, both as regards their practical and aesthetic treatment: the Board have been obliged to go out them to pieces that a new design is necessary: and when they have obtained it in accordance with the latest instructions, I very much doubt whether they will have the area for market purposes which was stipulated in their original public-bid requirements and instructions to competing architects. You would have been told that the Board had been told the plan, and heard the various criticisms thereon. The local Board has become a laughing-stock, and a striking instance of what men in a corporate capacity can stoop to.

KEEL AND RUDDER.

Sir,—Naval architects are in conclave endeavouring to devise remedies for the increasing disasters and losses at sea. I hope good will result. Allow an old salt to bear a hand.

Casualties occur through the ship not answering to the helm; an adverse current often prevents its gripping the water. I have made a rudder with an india-rubber centre, and whichever way it is turned it will cup and bag the water; thus great power is gained. I have shown it to a few nautical men, and they think well of it. It can be made of any degree of strength, and will never decay under water. I have also devised a keel fan or fin (of imperishable material) to prevent rolling or going over on her beam-ends. This fan can be drawn down in an instant by a turn of the winch; it will stay itself away alongside the keel when not required. It may prevent top-heavy craft being blown over.*

Perhaps some of our naval philosophers will adopt these twins. They are my offering, but I am unable to do for them. R. T.

BELL LEGENDS.

Sir,—A short time ago I examined the bells in the spire-steeple at Kelton, near Stamford. The legends upon them may interest readers of the *Builder* who are collectors of such inscriptions, and who do not possess these specimens. They are as follow:—

1501
RECEIVED BY THE
1501
1501
1501
1501

BE IT KNOWN TO ALL THAT DOTH ME SEE
THAT NEWCOMBER OF LEICESTER MADE ME
(Big bell.) 1505.

I SWEETLY TOLLING DO CALL TO TAKE ON
MEAT THAT FEED THE SOULE. 1509.

MOSES; SISON; C. H. W. HENRY; PENNY;
FUSORE; 1713.

T. WOTTON; W. ROWLETT; NICHOLAS; BUL-
LINGHAM;
AB. MK. NUIS; SUMPTIBUS; NIC. COLLOCARI;
CURAVIT; 1640.
(Treble.) W. 1748.

F. R. WILSON.

WOODEN PULPITS.

Sir,—Can any of your readers tell me where I can see a really good wooden pulpit, such as would be fit for the use of a large cathedral? Enquire.

ACCIDENTS.

A GREAT fire has taken place near Drury-lane in a range of premises belonging to Messrs. Flavell, timber benders, No. 16, Parker-street. The premises in question were covered by ground, and were fitted up with machinery of great value. The conflagration could not be subdued until the factory was nearly destroyed. The whole of the workmen have lost their tools, and they were uninsured. The origin of the fire is unknown.

A heavy thunderstorm recently passed over Halifax and neighbourhood, its effects being particularly felt at Ormsdon, where the residence of a cotton-spinner was struck. The lightning went down one of the chimneys, and, with two exceptions, entered every room in the building, smashing all the windows and destroying the principal staircase. The lightning passed through the back kitchen window, which was instantly demolished, and entered the yard, where it tore up the flags, after which it entered the wash kitchen, destroyed the pump, and tore up the flags. Considerable damage was done to the house internally. Fortunately no one was injured. There was an immense fall of hail-stones.

Trenton Hall, the Staffordshire seat of the Duke of Sutherland, has had a narrow escape from destruction by fire. The fire was discovered in a closet. The stairs were so full of smoke that the hose could not be carried into the house, and an opening was made, through which a strong stream of water was poured. After an hour and a half the conflagration was entirely extinguished, the closet being destroyed, and the adjoining apartments more or less injured. Besides three powerful engines kept in

* As an illustration or example, float two works, with a suspension partly inserted in one of them, then agitate the water with a pump, which rises over the "mountain waves" steels.

the building, pipes and plugs ran all through the house ready for immediate use. These appliances probably saved the hall.

A correspondent of the *Standard*, writing from Vienna on the 6th inst., says:—"A dreadful accident took place here this morning. The immense scaffolding in front of a new house in the Maximilian-street suddenly gave way, and buried beneath its dismembered parts and a fearful mass of heavy stones about twenty men and women. It appears that the upper wall was not thick enough to support the stones laid upon the roof, which the roof in part rests. That part of the masonry work was completed in the depth of winter, and it is supposed that the half-frozen mortar then used gave way under the influence of the sun's rays. Be this as it may, a heavy responsibility attaches to the architect and to the builder. Firm men labourers and three men are dead; the remainder were conveyed to the nearest hospital, not dangerously mutilated and wounded. The lives of but few can be saved."

SCHOOLS OF ART.

Hanley.—The annual meeting of the supporters of this school has been held at the Mechanics' Institution, Hanley, under the presidency of Mr. Alderman Wedgwood, chairman of the committee. There was as usual an exhibition of the works of the advanced pupils, many of which displayed ability, but it was considered doubtful whether on the whole the exhibition was equal to those of some former years. At the last annual meeting Mr. Bodley offered a prize for the best design of a stained glass window, and this produced three or four tolerably successful efforts; but the competition did not excite the interest which had been anticipated. The attendance was fair, but not large. The annual report said:—"Your committee have pleasure in recording their satisfaction with the progress made by the students under the able teaching of the master, Mr. Carter, and would at the same time express their regret that they are about to lose his valuable services." Mr. Carter's report stated that the several classes had continued to progress steadily and efficiently, and that he felt the greatest satisfaction in directing the attention of the friends of the school to the high quality of the work in the advanced section of painting and modelling as a sufficient proof of the present healthy condition of the institution. The total number of students for the year had been 158, showing a decrease of 17 upon the previous year. As this loss had been felt chiefly in the elementary section, he trusted it would be looked upon as but a temporary falling off in the numbers. The prize were distributed by the chairman.

Cork.—There is now exhibiting at Mr. James Hackett's establishment in Patrick-street, Cork, a silver medal, which, from its intrinsic value and the circumstances under which it has made its way to Cork, is one of the most interesting objects aimed at the busy which attract the eye in the shop-window. It is a prize which has been awarded to Mr. Jeremiah Mullins, of Maylor-street, coach-painter, and student of the local School of Art, by the Worshipful Company of Coachmakers and Coach Harness-makers of London, for the best drawing and painting executed in competition with the students of Schools of Art engaged in these trades throughout the United Kingdom.

CHURCH-BUILDING NEWS.

Wickham Market.—The church of Wickham Market has been restored. The exterior restoration has been confined to partly rebuilding the east wall, rebuilding the other defective parts of the walls of the nave and chancel, refacing them, newly pointing the buttresses, and filling the panels with black flint, and where necessary the stonework of the windows and doorways has been restored. The interior has been completely altered, and is lighted by the windows which were formerly in the north wall of the nave, and by a special arrangement at the north end. The rest of the aisle is of deal. The interior of the chancel, so far as the fittings are concerned, has been completely altered from what it was. The plaster ceiling of the nave, however, remains. The gallery that blocked up the west window is gone, the old pews are replaced by open benches, and the gallery in the south aisle is gone. In the north chancel aisle, the organ

(which has been repaired by Mr. Green, Ipswich) is placed, and in the chancel are benches and stalls for the choir and reading-desks for the clergy. The roof of the chancel is coloured a deep blue with golden stars at regular intervals, and that of the south aisle is similarly treated. In the tracery of the east window, at its highest point, is the figure of our Lord, carved in stone, and the vicar has obtained a design for filling the window with stained glass, the subject being the Adoration of our Lord by the Angels. The three upper compartments have been filled with stained glass at Mr. Inigo's expense. The contract work has been carried out by Mr. Henry Luff, of Ipswich. The total cost is about 1,400*l.*, of which the subscriptions fall short by some 300*l.* There is a gain of over 160 sittings, the number who can now find accommodation in the church being about 700. Mr. Hakewill was the architect.

Limington (Somerset).—The church of Limington church has recently been restored, and part of it rebuilt, as it was out of the perpendicular and almost dangerous. It is fifteenth-century work, and contains some portions of the ancient elaborately carved bench-ends and poppy-heads, and linen-pattern panelling. But the most interesting objects concerned during the progress of the works were some thirteenth-century coffin-lids, exquisitely floriated, and fortunately in a very fair state of preservation. The chancel was blocked up with modern masonry, into which the remains of the ancient seats had been inserted. These incongruities have been swept away, and the old work replaced in properly-arranged chancel seats. The base of the roof and some remains, and has, of course, been preserved. The old roof which was dilapidated has been replaced by an arched ribbed and panelled ceiling, with carved pateras at the intersections. It is hoped that before long the rest of the church, which is of earlier date and of great interest, will be restored. Mr. Ferrey was the architect, and Mr. Maurice Davis, of Langford, the contractor.

Honington (near Southampton).—This new church at Honington has been consecrated by the Bishop of Winchester. In plan it consists of a nave (with north porch), chancel, and vestry; at the west end is a bell-turret, formed of oak. The main material of the walls is composed of stock bricks, faced externally with field flints, and rough-stuccoed internally. The quoins and dressings to the exterior of the church are of Coram Down, and inside, of Combe Down stone. The nave has an open-timber roof, filled in at the back of the rafters with V-jointed boarding. The chancel roof is polygonal in form, with moulded ribs, and has carved pateras at the intersections. The whole of the internal walls up to the window-cills are lined with Mr. May's tiles. At present the church is being tiled in the introduction by the agents, Messrs. Simpson & Sons, of hand-painted tiles in place of ordinary encaustic, by which they think the apparent repetition of the pavement on the wall is avoided, and a more artistic effect gained. The tiles being painted in enamel colours, are perfectly durable. The east window is filled with painted glass, by Messrs. Clayton & Bell. The church will accommodate about 300 persons, and all the seats are open. The architect was Mr. Ferrey, and the builders were Messrs. Goddard & Son, of Farnham.

Stretton (Norfolk).—This church is about to be enlarged and restored under the direction of Mr. H. M. Phipson. Such timbers of the nave roof as are decayed will be taken out, and others in oak, precisely similar in size and moulding, substituted, and the whole roof covered with lead. This roof is figured in Braden's "Open-timber Roofs." A new north aisle is to be built, with three stone arches and piers opening into the nave, the present decorated windows on the north side of the nave being refitted in the aisle walls. The roof of the aisle will be in pitch pine, with moulded timbers and tracery spanning, and covered with lead. An unsightly west gallery will be removed, and the benching will be continued in the aisle, in oak, similar to that at present in the nave. A new organ-chamber at the east end of the new aisle will be erected, and have arches opening into both aisle and chancel. The passages are to be paved with tiles, and Gidney's underground stove used for warming. The contract has been taken by Mr. Greenwood, of Weymouth, Suffolk, who has restored several churches under Mr. Phipson, in this district, in a satisfactory manner.

Wington.—Christ Church, Redhill, has been re-opened for divine service. Being situated on

a spur of Broadfield Down, overlooking the vale of Winton, and exposed to the full power of the south and west gales, the walls had become more or less permeated by the rain from those quarters, and the inside very much disfigured; and as the time had arrived when a thorough cleansing of the interior was requisite, it was considered indispensable first to remedy the dampness. This has been effected by removing the plastering from the interior and coating the walls with asphalt, and then repainting thereupon. The walls were considered suitable for the introduction of colour-decoration, and a plan, subservient to the architecture of the building, for lining out and decorating them in encaustic painting, has been carried out. An ornamental string course, or impost, runs round the church and chancel at the level of the springing of the windows and chancel arch, and a second string around the chancel at about 5 ft. from the floor. The intermediate space is lined out in blocks, and the space above the upper string in the chancel and east end of the church dispersed. The arches and soffits of the windows have been lined out archwise, and the chancel arch similarly treated. The leading colour is Venetian red upon the stucco ground, with green and gold colour upon the white ground for the ornamental portions, the whole of which are outlined with black. The repairs and improvements in the church have been carried out by Mr. Thomas Young, of Bristol, under the direction of Messrs. Foxter & Wood, architects.

Belly Hill (Birmingham).—The foundation-stone of a new church, which is to be erected at Belly Hill, has been laid by Miss Jeffery, of Pack Lane, Edgbaston. The site chosen for the edifice is on the brow of a hill at the top of the Eastern-road, and about midway between the Bristol-road and the Pershore-road. The cost of the church will be a little under 3,000*l.* The builder is Mr. Charles Jones, of Birmingham.

Overton (Wiltshire).—The chancel of the parish church is being recast, and an endeavour being made to revivify more in harmony with the other portions, particularly the north transept, which is contiguous to it. The style of the new work will be that of the fifteenth century, and it will consist of new east, north, and south windows, new roof, chancel arch, paving, and seating, the whole of which, it is hoped, will be completed in about six weeks or two months. A house, which has been for some time rented by the late countess, has now been purchased for a rectory. The building only needed some minor repairs and alterations, with painting, &c.; but the offices required entire reconstruction and rebuilding, and some additional sitting-rooms and bedrooms were required. The additional rooms have been joined to the old house. The offices and stabling are also built in continuation. The work is being executed by Mr. John Edge, of Overton, from the designs and under the superintendence of Mr. Wm. Milford Telson, of London.

Leigh.—The architects of the proposed new parish church, Messrs. Paley & Austin, of Lancaster, have forwarded to the chairman of the committee a plan and a prospective view of the exterior, as they propose to rebuild it. As stated in the architect's report, it is not intended to remove the tower, but to restore it as it stands. The whole of the church will, however, be entirely rebuilt. The site of the church, as shown on the drawing, is nearly that of the existing building. The plan presents a long unbroken nave and chancel 125 ft. in length, of which the chancel takes 40 ft., and the nave, in width, including north and south aisle, the ascending springing from octagonal piers. If a chancel arch is intended, it is apparently proposed that it should die away into the piers on either side, and not divide the building, but preserve as far as possible the unbroken line from east to west, which forms the keynote of the design. The chancel is raised two steps above the nave, the choir being accommodated on either side. The only difference apparently between the nave and the chancel will be a greater richness of detail in the latter part of the church. The seats are arranged with passages down the centre of the nave, and one also in each aisle. The tower arch is thrown open. A porch is provided at the west end of the south aisle, and entrance also apparently to the vestry. Separate entrances are also given into the children's aisle by a doorway united with one of the exterior buttresses, and a priest's door is shown to the vestry on the north side. The style is that of the present church.

The church is raised some 2 ft. or 3 ft. above the present level, which will obviate interfering more than is absolutely necessary with the remains of those interred within the church. The subscription-list requires to be largely increased. The Grammar School accommodation is sadly deficient, and the erection of a more suitable building would be a great advantage to the town.

Stairland.—A boon is about to be conferred on the district of Holywell-green, in the shape of a cemetery and its chapel, to be formed at the expense of Messrs. J. Shaw & Sons, from designs by Messrs. Horsfall, Ward, & Pathelet, of Halifax. The site, which embraces an area of about 4,000 square yards, is in rear of the present schools, and is triangular in shape. A little cemetery chapel, Gothic in design, is placed in the grounds, and the number of graves will be 746, so that the ground will suffice for one hundred years to come, and ground will be left for future enlargement. A site is also left, close to the schools, for an intended new Congregational chapel, to be built at a future day.

Burford (Oxfordshire).—It has been unanimously resolved at a meeting of parishioners, that it is desirable that the church of Burford be restored under the supervision of a committee, who have prepared plans and specifications. A committee was appointed at the meeting. The sum required is between 4,000*l.* and 5,000*l.*

Bridlington Quay.—The corner stone of a new church at Bridlington Quay has been laid by the Rev. Y. G. L. Greame, of Bewsey House, who gave towards its erection 1,100*l.*, and his sister, Miss Lloyd, of Stockton, Hall, 500*l.*, the remainder to be raised by private and public subscriptions. Mr. Richard G. Smith, of Hull, is the architect, and Mr. J. Rennard, of Bridlington Quay, the builder. The site was given by the owners of the Beaconfield estate. The new church will be composed of a nave, chancel, tower, vestry, and north aisle; the space for the south aisle is left for further extension. The length of nave, 16 ft. and breadth, 24 ft., north aisle, 17 ft. 3 in. by 64 ft., and the base of the tower, 24 ft. square; chancel, 36 ft. long, and 30 ft. wide; vestry, 25 ft. long by 18 ft. wide. The building is calculated to hold 500 people. Its cost will probably be about 4,000*l.* The church will be of the Gothic order of the twelfth century.

Bunsey.—The restoration of the chancel of St. Mary's Church is now completed. Its chief feature is a stone reredos, executed by Mr. Henry Nares, of this town. It consists of perpendicular panel work of the fifteenth century, the central compartment (containing the Commandments and sacred monogram) being enriched with polished marble columns and carved capitals. The floor of the chancel has been laid partly with Portland stone, and partly with Minster's encaustic tiles.

Upper Holloway.—On Saturday, the 9th instant, Bishop Ryan, acting for the Bishop of London, consecrated St. Paul's Church, which has been erected in the Kingsdown-road, Upper Holloway. The building consists of a nave 66 ft. long and 24 ft. wide; a chancel, 33 ft. deep, terminated with a three-sided apse; and north and south aisles, each 80 ft. long, 13 ft. wide, and 20 ft. high. The roof over the nave is 55 ft. high, and that over the chancel is at the same level. As there is no chancel arch, the clerestory windows, which are nearly 20 ft. high, are continued round the chancel. Five arches on each side divide the nave and chancel from the aisles. There are supports on each side of the nave, and a central support at the east end. The floor is paved with Portland stone. At present sittings are provided for 600 persons in open benches of deal, stained and varnished; and there is unoccupied space for another 100 sittings. The roofs are neither stained nor varnished; that over the nave and chancel is boarded to a cradle form in the centre, supported on groin-shaped pendentives between the clerestory windows. The walls are built of yellow stock bricks, with Bath stone-dressings. The inside walling is relieved by occasional bands and arches of red brick. Externally, the effect chiefly depends on the height (72 ft.) to which the unbroken line of the roof over the nave and chancel rises. An octagonal bell turret, covered with slating nearly 90 ft. from the ground, caps the west gable. The walls are lighted by dormer windows, filled in with plain tracery. With the exception of moulded eaves, cornices of red brick, no decorative features have been introduced on the outside of the church. The total cost is 5,100*l.*, including gaslights and heating, by Goldworthy Gurney's store. The

work has been carried out by Mr. Thompson, of Cumberland, under the design and under the superintendence of Messrs. Henry Jarvis & Son, architects.

Ilchester.—The first stone of the new church here has been laid. It will consist of nave, with western bell-turret springing from the ground, chancel, vestry, and south porch. The old open-timbered roof will be repaired and under the nave. Accommodation will be provided for 200 persons in open seats of pitch pine. The chancel fittings are intended to be of oak. Local stone is being used for the walling, and Sheloke for dressings. The work is being carried out by Mr. W. Morgan, of Llandaf, Cereinion, under the designs of Mr. E. Haycock, jun., architect, Shrewsbury.

Islington.—St. Anne's Church, Poole's Park, has been consecrated. The new ecclesiastical district of St. Anne's is taken out of that originally assigned to St. Mark's, Tollymore Park. The church, which is situate in the midst of a rapidly rising district, near to Finsbury Park, was erected from designs furnished by Mr. A. D. Gough, architect; and in style and character it is Lombardic. It is built of brick, with Bath and Mansfield stone dressings. The internal divisions comprise nave, north and south aisles, chancel and vestry, organ chamber, and western gallery. The nave is divided from the aisles by Bath stone piers, from which spring arches of black, red, and white bricks. The clerestory windows are similarly ornamented. The roof is open-timbered, and raised and varied, and supported upon fifteen semicircular headed principals, springing from corbel shafts of stone, with carved caps and foliated drop corbels. The chancel arch is of Bath stone and semicircular, supported upon stone shafts, carved capitals, and moulded bandings. The accommodation provided for 1,600 persons, the south aisle being chiefly on the ground floor. The church is paved with coloured tiles. The entrance are from Poole's Park and Palmerston-road. Messrs. Dove Brothers, of Islington, were the builders, and the contract price was \$3,751; but this is exclusive of the upper part of the lower and spire, the enclosing boundary and gates and railing. The total cost, including architect's commission and incidental expenses, is put down at £2,704. Two memorial windows, given by the architect and the incumbent, are the work of Mr. Gibbs, of London.

STAINED GLASS.

Elton Church, Oundle.—Two three-light painted and stained glass memorial windows have just been erected in this church. One, at the east end of the south aisle, has, in the centre opening, the Crucifixion; in the dexter opening, the Baptism; and, in the sinister opening, the Resurrection of our Saviour. Each group is under a canopy or shrine, with an inscription at the base, "To the Memory of Granville Leveson Froby, third Earl of Caryfort, Admiral R.N., born in 1783, died November 3rd, 1868, this Window was erected, by his Son and Successor, Granville Leveson, fourth Earl." The window adjoining (south) contains, in the centre opening, the Nativity; in the dexter opening, the Ascension; and, in the sinister opening, the Angel at the Sepulchre, with the three Marys. These are in medallion shapes, on a mosaic background, with an inscription at the base,—"To the Memory of Isabella, Wife of Granville Leveson, third Earl of Caryfort, died January, 1836, this Window was erected, by her Son, Granville Leveson, fourth Earl." These windows were executed by Messrs. Baillie & Mayer, of London.

East Bedford Church.—A new accession has been made to the interior of this church by the erection of a window in three lights, near the south door, by Mr. O'Connell. The large idea of the illustrations in the three lights is to give examples for imitation of the submission of Christ to his earthly parents.

Shillingford St. George, Devon.—A stained glass window has been placed in the south wall of this church, to the memory of the late Mrs. Pitman, of Devonport. The large central opening is filled with representations of St. Catherine and St. John, and the tracery openings with appropriate texts. The whole has been executed by Mr. Drake, of Exeter.

Hausley.—Messrs. J. & J. King, of Norwich, have recently executed a memorial window, in commemoration of the charity and kindness manifested to the poor in her lifetime by the

late Miss Pretyman, of Hangleby-part, Suffolk. The window, which consists of four lights, has for its subject the alms-giving, the death, and the raising of Dorcas. The window was designed by Mr. T. J. Soot.

Hereford Cathedral.—A memorial window, to the memory of Capt. Edward Kempton, brother to Mr. F. B. Kempton, of Hereford, architect, has been placed in the north transept of the east aisle of the north transept of this cathedral. The window is by Messrs. Clayton & Bell, of London. It adjoins that erected to the memory of the late Captain Arkwright, and is a similar three-light window, the subject being, in the centre compartment, the figure of St. Michael, with a medallion beneath representing two angels, and the badge of the Cameronians (26th Regiment), composed of a star in the centre, and the word "Cameronians" encircling it. On the right is represented St. Alban, and the martyrdom of that saint is the subject of a medallion beneath. In the left compartment is St. George, with a medallion containing a representation of that saint and the legendary dragon beneath it. In the three circular lights in the heading of the window is represented, in the centre, the shield of faith, and in the other two respectively, the "sword of the spirit" and the "helmet of salvation."

St. Olave's, York.—A three-light memorial window, executed by Mr. J. W. Knowles, of York, has been erected on the south side of this church. The subjects are Faith, Hope, and Charity, and are represented under canopies of the Perpendicular period.

St. Lawrence's, York.—A two-light memorial window, painted by Mr. J. W. Knowles, of this city, has been erected in the south side of this church. The subjects are the Crucifixion and the Resurrection, which are represented in panels under canopies of the Perpendicular period.

Great Gaddenden Church, near Hemel Hempstead, Bucks.—A stained glass window has been fixed in this church in memory of the late Mrs. Moore Halsey, Lady of the Manor, containing the subject of Dorcas feeding the hungry, and other acts of charity; the death of Dorcas; and St. Peter raising Dorcas to life, under canopies, with angels in pedestals. The work was designed and executed by Messrs. Holland & Son, of Warwick.

Trinity Church, Gosport.—The picture set by the erection of a memorial window in the east end of this church is likely to be promptly followed by the erection of another window on the south side, thus completing the design which the two already placed there in part only illustrate. The church being dedicated to the Holy Trinity, the windows will be devoted to the mystery. The central window is a representation of the worship offered in heaven to the Eternal Father, and the symbols under which the Holy Scripture has veiled Divine realities in the fourth chapter of the Revelation of St. John have been employed. The object of worship is represented by the human nature which our Lord has taken into the divine—"A throne is set in heaven, and one sitteth on the throne." The covenant of grace is shadowed forth by the rainbow that overarches the throne, and around the Creator are the four living creatures which are types of life outflowing from the central source, and around the worshiper's sacrifice of praise. Before the throne are the seven-branched candelstick and the crystal sea, symbols of baptismal washing, and the manifold, yet uniform, energies of the Holy Ghost. Beneath, and in the foreground (so to speak) of the picture, the olive of the old and new covenant is offered for the worship of the church—"In Him that liveth for ever and ever," casting down the crowns before the throne. The north window is devoted to the second person of the Holy Trinity, whose incarnation for the salvation of man is figured by the adoration to the Babe in the grotto of Bethlehem. Above, the hosts of heaven obey the command of the Father, "Let all the angels of God worship Him." The windows are from the firm of Messrs. Holland & Son, of Warwick, and have been placed in position by Mr. Jesty, of Gosport.

The large lateral workmen from the establishment of Messrs. O'Connor of London, have been engaged in the erection of a new stained glass window in the south nave aisle of this cathedral, between what may be termed the Pilkington and Roberts memorial windows. The window, which is now completed, is constituted as a memorial of the late Mrs. Johnson, mother of Mr. E. W. Johnson and Mr.

J. J. Johnson, Q.C., Recorder of Chichester. The design is a representation of four events in the life of St. John the Evangelist: the first being his call by the Saviour; the second is John taking the mother of Jesus to his own home; the third is the Beloved Apostle as an aged man teaching his disciples; and the last is the banished disciple in the island of Patmos when, gazing on the sea, a divine vision which is made to pass before him, he sees, "The Holy City, New Jerusalem, coming down from God out of Heaven, prepared as a bride adorned for her husband." The whole is surmounted by a medallion of the Evangelist.

Guisborough, Cleveland.—A new stained-glass window has been placed in this church in memory of the late Mr. Robert Capes, by his executors. It is the easternmost window on the south side. The subject is the resurrection of Lazarus. It is intended to harmonise in idea with the opposite window, on the north side, with which it corresponds in position and colour of its border and arabesque work. It is from the studio of Mr. O. E. Clutterbuck, and its cost was 75s.

Books Received.

The Organist's Quarterly Journal. Novello, Ewer, & Co., Berners-street.

This Organist's Quarterly Journal of original compositions, the sixth number of which, published on the 1st of the month, is before us, is a publication well deserving encouragement on the part of any journal devoted to the interests of art. In England the organ was long considered as an instrument mainly for the display of *catapault* playing; and later it has been given up for too long a time for the performance of mere "arrangements" of music, not originally written for it, nor suitable to it. The attempt on the part of Dr. Spark, the editor of this *Quarterly Journal*, to provide a series of compositions by modern composers written for the instrument, in every way deserving of success. The present number includes compositions by Gustave Merkel, and the less known names of Tietz and Korbusch, and also one from the pen of Mr. F. Archer, the talented English organist, who has made Brighton his headquarters. If these do not present the clearness of form and certainty of intention of the older German organ-composers, they have merits of their own, which are peculiar to modern music.

VARIORUM.

THE current *Quarterly* examines appreciatively the position of Eastlake and the claims of English art. The writer takes high ground, and sees in Hogarth, Reynolds, and Gainsborough the "heroic ancestors" of modern art.

"What does painting owe to these men, and to their countrymen and contemporaries? It owes the power to deal with the tragic and the comic side of human life; to hold up the mirror to ourselves, teaching and improving us while it pleases. It owes the perception of the magic of landscape. It owes the restoration of the imaginative spirit of portraiture. It owes the discovery of childhood as one of the purest and most attractive sources of pleasurable representation. It owes the first fusion of the prosaic incidents painted by the Hollanders with the sentiment of modern poetry and romance." And when we compare the present state of the art with the position it occupied presented by the first school of painting, highly restricted to religious teaching; or, with the second, devoted to an artificial and conventional style, we are tempted to wonder, swerving between worn-out traditions and half-understood new impulses, we may fairly say that that art which was inaugurated by the English masters of the last century was a new thing in Europe. It bears the name of painting, yet it is almost wholly different from what bore the name three hundred years before; it appeals to other sympathies, it pursues other objects, it must be tried, in a great measure, by other standards."

An elaborate article on "Non-Historic Times" will also interest many of our readers. The writer considers that Silbury and Stonehenge belong to post-Roman times and connects them together in the Roman pre-historic. "We may mention, as bearing on the same inquiry, that the *Quarterly Journal of Science* (April) contains a paper on "Megalithic Structures of the Channel Islands: their History and Analogues," by Lieut.-Col. S. F. Oliver, of Farnham. It is illustrated with several views. "The second number of the *Photography Art Journal* contains illustrations of considerable interest adopted by some of the new processes. The "Stirrup Cup,"

* Note also that England is equally the inventor of water-colour painting, with all its vast and varied capacities for humanising and elevating pleasure. But this branch of art would require separate consideration.

after a painting by Verachere, has been photographed and printed in permanent pigments by M. Goupil, of Paris, by Mr. Walter Woodbury's process, and is remarkably beautiful. The second illustration, "Witley Abbey" is printed in printers' ink, at the ordinary printing-press, by a process recently perfected by Messrs. Edwards & Kidd, and assimilated in many respects with the Albert-type process, the prints being taken direct from the gelatine and bichromate matrix. The third is produced by an autotype process, and the fourth is an example of Fiwitz's phototypy, and illustrates the power of reproducing printing surfaces from engravings, drawings, and wood blocks, thus rendering the works of the great art-masters of the past capable of cheap reproduction.—The first article in *Præterea* for this month makes a good fight for the agricultural labourer and his children, a long-neglected class.—"Spon's Tables and Memoranda for Engineers, selected and arranged by J. T. Hurst," will lie in the smallest waistcoat-pocket, and will often be found useful as a plectrum at hand in some of the more useful of the pound left at home.—Hardwick's has published, as usual, his "Shilling House of Commons for 1870," his "Shilling Knights," "Shilling Baronetage," and "Shilling Peerage." The fact that they are edited by Mr. Edward Walford, M.A., gives assurance that so far as they go they may be depended on.—"The Woman of Business; or, the Lady and the Lawyer, by Marmion Savage" (Chapman & Hall), is a very good novel. The story is interesting, and the interest is well maintained throughout the three volumes in which it is told.

SALES OF HOUSES.

APRIL 13.—By Mr. W. H. Moore.—Leasehold residence, No. 15, Abbey-gardens, St. John's Wood; annual value, £ 10, term, 99 years unexpired, at 10 per annum—sold for 500*l*.
Leasehold house, No. 6, Robert-street, Euston-road; annual value, 9*l*. 10*s*. term, 97 years from 1818, at 10, 1*s*. per annum—sold for 900*l*.
Leasehold, No. 15, Gray-street, Hampstead-road; let on lease at 11*l*. 6*s*. per annum; term, 96 years from 1818, at 1*s*. 6*s*. per annum—sold for 300*l*.
By Mr. Siler.—Leasehold, No. 25, Drury-lane; let at 10*l*. per annum; term, 61 years from 1818, at 1*s*. 6*s*. per annum—sold for 475*l*.
By Messrs. Rogers & Chapman.—Leasehold, Nos. 3 and 4, Upper Dorset-street, Finsbury, producing 94*l*. per annum; term, 771 years from 1818, at 12*l*. per annum—sold for 1,500*l*.
Leasehold, Nos. 61 and 63, Broadborough-street, Finsbury, producing 128*l*. per annum; term, 83 years from 1860, at 10*l*. per annum—sold for 1,250*l*.
Leasehold, No. 46, Lopus-street, Finsbury; annual value, 75*l*.; term, 70 years from 1865, at 11*l*. per annum—sold for 400*l*.
Leasehold, Nos. 11, 12, 14, 15, and 16, Vincent-square, at 60*l*. per annum each; term, 60 years from 1848, at 1*s*. 6*s*. per annum each—sold for 2,000*l*.
Leasehold, Nos. 70 and 72, Lopus-street, Finsbury, producing 130*l*. per annum; term, 70 years from 1855, at 1*s*. 6*s*. per annum—sold for 1,000*l*.
Leasehold, No. 92, Charnwood-street, Finsbury, at 60*l*. per annum; term, 791 years from 1855, at 10*l*. per annum—sold for 900*l*.
APRIL 14.—By Mr. H. J. Phillips.—Freehold residence, No. 3, Devonshire-street, Pall Mall; annual value, 55*l*.—sold for 670*l*.

Miscellaneous.

The Hardships of Brickyard Children.—

A correspondent of the *British Workman* says: Some of the boys employed are about eight years old, and each one is engaged carrying from 40 lb. to 45 lb. weight of clay on his head to the maker, for thirteen hours a day, traversing a distance of fourteen miles. The girls employed are between nine and ten years of age. They are partly occupied, instead, in taking bricks to the kiln. Some of the children are in a semi-nude state. Many of them in Derbyshire work what is called "eight-hour shifts," which, reckoning from two o'clock on Sunday night to twelve o'clock on the Saturday night following, makes a weekly labour of seventy-two hours. To ascertain really what work these children have to do, we must suppose a brickmaker (took over quick in his operations) making 3,500 bricks per day. The distance the boy or girl has to travel with mould, which weighs 41 lb., and bricks in it 101 lb., one way, and back to the brickmaker with mould only, is upon the average twelve yards. This multiplied by 3,500 makes the distance nearly twenty-four miles; and each child has to walk every day, carrying this weight with it. Mr. Mandella stated in the House of Commons that "ignorance, vice, and immorality prevail to a greater extent amongst the employes in brick-yards than in any other trades." We are fully of the same opinion.

Railway Matters.—A new method of warming first-class carriages in express trains has been adopted in Bavaria. A special van is attached to the train, and contains a powerful "calorifier," and the heated air is conveyed to all the carriages of the train by means of indurubber tubes. The experiment with first-class carriages is reported upon so favourably that the authorities have determined to apply it to all the carriages on the Bavarian line, and it is anticipated that it will soon be adopted on the German railways.—The singular names possessed by stations on many of the Illinois roads have often been noticed, such as Plana, Loda, Pana, Polo, &c. A Western paper now explains that when the stations on the Illinois Central Railroad were fixed upon, it was deemed advisable, so far as possible, to give them Indian names, but so numerous were they that this would exhaust an ordinary Indian vocabulary. Accordingly, to obviate this difficulty, a quantity of vowels and consonants were written on slips of paper, and placed in a hat. These were all stirred up, and a few drawn out at random, when a clerk was required to exercise his ingenuity in forming them into a word.

Discovery of an Underground Dwelling in Ireland.—A curious discovery has been made on the farm of Kilmot, about two miles from Malin Head. While two men were raising a stone they found a large opening underneath. To the south of the opening there seems to be a small room, and a few drawers out at random, 10 ft. in length, and filled with limpet shells, beef bones, and ashes. North-west from the entrance is an apartment 12 ft. long by 9 ft. wide, and 5 ft. high; at the end of which is a small round hole cut in the rock, just enough to creep through, which leads to a passage 6 ft. long, by 3 ft. wide, into a fourth apartment, running with a kind of curve, and 20 ft. by 6 ft. Passing through this, the fifth division seems to have been a kind of water-room, with a clear spring in one end of it. The room is 12 ft. long, 9 ft. wide, and 6 ft. high. At the end of a kind of corridor, or drop, the entrance of which is very small; but the cellar is 45 ft. long and 5 ft. wide, at the end of which is another entrance, built up with a stone wall.

New Church at Barton-in-Street.—Mr. Meynell Ingram, the chief land-owner in Barton-in-Street, near Malton, has had the old church demolished and a new one commenced in its place at his cost. The new church will be from designs by Mr. Perkin, architect, Leeds. The whole of the sculptures in the old church are being rebuilt in the new walls. The builder is Mr. Barton, of Slingby. The late structure was of great antiquarian interest, in consequence of the number of sculptured stones which were found in this respect. It was very rich in Early Norman work. The church was evidently built from the ruins of some other, and antiquaries have never settled the point as to whether St. Mary's Abbey, at York, or the Church of the Holy Trinity, at York, was used as the quarry. A third party hold that neither of these churches, but a still earlier Norman building, furnished the materials.

Public Spirit in Hindoo.—The visit of the Duke of Edinburgh to Western India will be commemorated by many magnificent public gifts from the native princes and chiefs. The Guicowar of Baroda has given 20,000*l*. for the erection of a sailors' home at Bombay; the Rao of Kutch 15,000*l*. for the erection of a school; and the Nizam of Hyderabad has given 100,000*l*. for the erection of a new High School in Bombay, and 2,500*l*. to purchase an organ for the Bombay Town-hall; the Chief of Junnabund, 10,000*l*. to secure a water supply for his capital; the Rano of Omandur, 1,000*l*. to the Alexandra Nautical Girls' Institution; the Nawab of Joannabur, 10,000*l*. for public works; the Chief of Bhowanagur the same amount for the same purpose; and many smaller sums have also been given which are to be devoted to public works.

East Meon Church.—The restoration of this church is now near completion. The *Forgerush Times* say: "In spite of great difficulties, owing to the high winds rising through the valley, bandstands ere has been erected. Mr. Smith, contractor, of Lion-terrace, Portsea, has had the entire management of the work."

St. Mary's, Exeter.—It is proposed to erect a tower to St. Mary's Church, Exeter, in memory of the late Bishop of the Diocese.

White Lead.—An improvement in the manufacture of carbonate of lead, by the action of the soluble acid carbonates of the alkalis on lithargy, hydrated oxides of lead, or insoluble basic salts of lead, has been patented by Messrs. Dale & Milner, of Warrington. The inventors mix lithargy, hydrated oxides of lead, or insoluble basic salts of lead, with an equivalent of bicarbonate of soda, together with sufficient water to form a thick paste. This mixture is ground in a suitable mill, and an addition of water being from time to time added as may be found requisite, until the change of the lead bodies into carbonates is complete. The paste is now well washed with water, and the supernatant liquid which contains the carbonate of soda is separated from the white lead by filtration, and boiled down to dryness, and disposed of as soda-ash; or it may be crystallised, or may be again converted into bicarbonate of soda by treatment with carbonic acid, and used to convert further quantities of lead oxides or insoluble basic salts of lead into carbonates.

Unsanitary Condition of Fenry.—A startling report has been made to us concerning the sanitary condition of Fenry. We state that the existing drainage works are utterly inefficient; stagnant pools and decomposing refuse are in the streets; there are no water closets, and everywhere the most utter sanitary neglect; the streams running through the town are open sewers; the slaughter-houses are in confined localities, and animals of the river is offensive and revolting; disease, destitution, and death have resulted; and the district in Rodock parish is, if possible, more filthy than that within the municipal boundary. Certain members of the town council are owners of some of the worst properties.

A "Day's Work."—A novel case occurred in the Glasgow Small Debt Court on Friday, in which the number of hours necessary to constitute "a day's work" was the point in dispute. The employer contended that the workman having commenced the work at mid-day and stopped at six o'clock, he was bound to work the next day till mid-day before he could claim the day's wage. The sheriff, however, replied this plea on the ground that the man having been allowed to commence at mid-day, had worked till the closing hour, and thus completed his day's work.

The East End Museum of Science and Art.—Earl da Grey says, in reply to inquiry as to the proposed museum at Bethnal-green:—"The erection of the buildings connected with the Science and Art Department, including the East-end Museum, has been transferred to the Board of Works, and is therefore no longer under my control. I learn, however, on inquiry, that a sum of 5,000*l*. has been proposed in the estimates for the present financial year for that museum; and I have every reason to believe that it is Mr. Ayrton's intention to proceed with the completion of the work."

Royal Italian Opera, Covent Garden.—In "Lucrèce Borgia," last week, a new *Mefisto Orsini*, in the person of Mlle. Carl, made a very favourable impression. Her opening song was charming in purity and accent, and the ever-popular *brindisi* raised a considerable enthusiasm. Her appearance in other parts will be looked for with interest. Signor Graciani as Duke d'Alfonso, was grand. Mlle. Sassi, who grows rapidly upon her auditors, has played Maria, in "La Figlia del Reggimento," with great success. She sang delightfully throughout. Signor Ciampi's *Sulpizio* is also a good performance.

Artists' General Benevolent Institution. The annual dinner in aid of this society will be held on the 7th of May, next, at the house of the Duke of Argyll. Most of our readers know that the object of this institution, founded in 1814, is to afford relief to distressed meritorious artists (whether subscribers to its funds or not), whose works have been generally known and esteemed by the public, as well as to their widows and orphans. Seventy-nine applicants were rolled under 1869, with 1,255*l*. Mr. J. E. Millais, R.A., is the hon. secretary.

Inquiry as to the Utilization of Sewage. The subscriptions to the fund for defraying the expenses of the proposed inquiry by the British Association Committee on Sewage amount to upwards of 12,000*l*, and the committee has decided that the inquiry shall be commenced at once.

Glasing with Reds.—A New York paper speaks of a new contrivance for preventing people looking into a room, while light is not excluded. It consists of a number of glass rods arranged either vertically or horizontally, and secured together by appropriate frames, forming a series of cylindrical lenses which break up the light, and throw it into every part of the room, thus producing a soft and diffused glow, which is very beautiful and pleasant. The glass rods may be of any colour, and by an arrangement of the colours very beautiful effects can be produced. The contrivance is the invention of Mr. Demuth.

Fall of a Cornice.—According to the *Kensington News*, about two o'clock in the afternoon of Sunday, the 10th inst., the cornice of a line of eight houses belonging to the Kilburn Estate Agent, Mr. H. Allen, and erected by Mr. Richard, fell simultaneously and without previous warning. Literally crashing in the cellar below. Bad building is said to have been the cause of the catastrophe. One of the houses was occupied by the Rev. Mr. Cocking, and the reverend gentleman and his family think that the parish would be nothing the worse for a district surveyor.

Building with Paper.—According to the *Scientific Review*, building paper now forms a regular article of commerce in the United States. It is a hard, compact paper, like an ordinary book-cover, and is saturated with tar, and used on the outside of frame buildings, under the clapboards, also under shingles and floors, to keep out damp and cold. It is also used on the inside, not saturated, instead of plastering, and is said to make a warm and clean wall. The Rock River Paper Company of Chicago are doing a large business in it.

Northumberland Architectural Society. The annual general meeting of the Durham and Northumberland Architectural and Archaeological Society was held last week in Bishop Cosin's Library, Durham, under the presidency of the Rev. W. Greenwell. It was decided that the first excursion of the society should be to Tynemouth and Seaton Delaval; the second to the ruins of the Roman Wall; the third to Ayrholm, Heighington, and Walworth Castle; the fourth to Boldon and Hylton Castle; and the fifth (two days) to Rivers, Helmsley, and Gilling, in Yorkshire.

Discovery of Roman Remains in Belgium.—The Belgian journals state that some Roman remains have just been discovered in digging the foundations for a bridge over the Meuse, at Outreux. The second pile of a similar structure, erected by Julius Cæsar during the conquest of Gaul, were brought to light, in a perfect state of preservation. Between two of the piles were also found a number of Roman coins, being the effigies of the Emperors Trajan, Vespasian, Adrian, Antonino Pius and his consort Faustine.

Filters, and Filtration.—It has recently been shown by Dr. Frankland that filtration does not only remove matter mechanically suspended in the water, but comprises also a chemical alteration of dissolved material. In some experiments ordinary London sewage water was purified to such a degree that, in respect of organic substance, it actually equalled in purity the water supplied to London for domestic purposes. A committee has, therefore, been organised for the systematic examination of water-filters, and to report fully upon them.

The Industrial Classes in Foreign Countries.—Her Majesty's diplomatic and consular agents abroad, to whom we are periodically indebted for a large amount of information as to the trade and manufactures of the countries in which they reside, have transmitted to this country a fund of valuable intelligence. Their reports have just been presented to Parliament in an octavo blue-book of nearly 600 pages, and have been forwarded in reply to a circular from Her Majesty's Secretary of State for Foreign Affairs.

Another Speaking-Machine.—Professor Faber's speaking-machine is to be exhibited at Hamburg during the continuance of the International Horticultural Exhibition. It is said to articulate various words, and even to answer questions and simple sentences, with wonderful distinctness. This is by no means the first invention of the kind that has been exhibited, but it is said to be more perfect than any previous invention of the kind.

Cathedral Improvements at Durham.—The Dean and Chapter of Durham have commenced important contemplated improvements of the cathedral, under the direction of Mr. C. Hodgson Fowler. Nearly a century and a half ago the whole of the structure was at intervals internally "whitened," and this the consular authorities have, by way of experiment, decided upon removing. To this end, therefore, scaffolding has been erected, and the entrance of the west end of the north aisle has been enclosed and the cleaning begun.

An Ancient Stone Sello.—A curious stone, believed to be Druidical, has just been discovered in a field near Dingle. It is 8 ft. long, 4 ft. broad, and about 2 ft. in thickness. In the middle of it is a hole, 14 in. square, and as many inches deep, which is neatly cut with a chisel, and the lower end of it coming to a point, or tapering to a sharp point. Such stones are believed to have been used in ancient times to consecrate marriages and other contracts by the joining of hands through the hole in the stone.

My Cathedral.—It appears from an examination made by Mr. G. G. Scott, that the north-east transept of this cathedral is in a critical state, and the dean and chapter have accordingly directed this portion of the building to be shored up. The whole of the foundations will be renewed with large stones from the rock foundations, which are several feet below the rail. The works are entrusted to Messrs. Freeman, of Ely, and will be carried out under the direction of their manager, Mr. E. Loftis.

Public Park for Bradford.—There is a prospect of Bradford becoming possessed of another public park. Mr. S. C. Lister has offered his estate at Manningham to the Corporation for public purposes for 60,000l., this being 11,000l. less than the sum at which it has been valued. In addition, Mr. Lister has indicated his willingness to subscribe 20,000l. towards the purchase money, and he will allow the Corporation to sell some fourteen acres, on which villas may be erected.

Statue of Lord Palmerston.—In execution of an order from her Majesty's Government, Mr. R. Jackson, sculptor, has just completed, for erection in Westminster Abbey, a full-length statue of Lord Palmerston. The figure, which is 8 ft. 1 in. in height, and is to stand upon a pedestal upwards of 6 ft. high, has been hewn out of a block of Carrara marble. The deceased Premier is represented as wearing the robes of a knight of the Order of the Garter, with mantle, collar, "George," and badge complete.

Wide Tenders.—Sir: For Nottingham-road, Wandsworth-common, the following tenders were opened:—

Crocker	237 15 0
Porter	238 10 0
Henson	238 0 0
Hough	231 0 0
Noel & Robson	146 0 0
Neale	137 0 0

the lowest of which was accepted. Where will it end?—CONTRACTOR.

Ripon Fine Art Exhibition.—This exhibition was opened on Tuesday by Earl de Grey and Ripon. The exhibition has been promoted for the benefit of the Ripon Scientific Society and Mechanics' Institution. It consists of specimens of fine arts contributed by the gentry and nobility of the county. It also contains a collection of pre-historic relics from the Yorkshire tunnel, which have never been exhibited before.

Telegraphic Progress.—Some interesting experiments have been made in London, with a view of testing the speed and efficiency of the service established by the Indo-European Telegraph Company. Direct communication was opened with Teheran, in Persia, a distance of 3,700 miles, and answers to questions were received within an incredibly short time.

Royal Horticultural Society.—A show of azaleas, auriculas, cyclamens, and other plants was held on Wednesday in the gardens of the Royal Horticultural Society. The weather was exceedingly fine, and there was a numerous attendance of visitors. The show may be generally described as a good one, embracing some very beautiful specimens.

Royal Society.—The President's conversations will be held this (Saturday) evening, the 23rd inst.

Carbonised Wood.—Mr. Bidot, by carbonising wood in a vessel of sulphate of carbon, obtained an obnoxious which, when struck, is as sonorous as a piece of metal. He then got a ball turned in wood, carbonised in the same way, and has now an instrument which gives a sound like that of a silver bell. The carbonisation is only superficial.

Society of Antiquaries.—The Fellows will be recommended by the council, at the anniversary meeting on the 26th inst., to alter the statutes so that the meetings may be held twice a month during the season instead of every Thursday as now. It is hoped that each meeting may thus be made more interesting, and induce the members to attend.

Hall, Dulwich College.—The large windows are filled with stamped and pressed glass from the Salford works, not "stained" as they are accidentally misprinted. The clock in the tower has just been completed by the firm of Messrs. B. R. & J. Moore.

Basingstoke.—The church of St. John the Evangelist at Hartley Wintney, near Basingstoke, has been consecrated by the Bishop of Winchester. It is built in the Gothic style of architecture, and will accommodate upwards of 700 persons.

TENDERS.

For alterations and repairs to dwelling-house and premises, High-street, Watford, for Mr. Frederick Dyson, Messrs. Groucher & Son, architects:—

Address	£718 10 0
Allen	750 0 0
Hartman & Cole	435 0 0
Waterman (reduced to 570l.)	604 0 0

* Accepted.

For alterations to the Rose and Thistle Tavern, Camberwell. Mr. Murphy, architect:—

Collis & Son	£643 0 0
Shapley & Webster	375 0 0
Shapley & Webster	360 0 0

For alterations and additions to the Heslop Arms Tavern, Peckham Rye. Mr. Cusson, architect:—

Shapley & Webster (accepted)	£600 0 0
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For the erection of an infirmary and new east wing to the Merchant Seamen's Orphan Asylum, Sparsbrook. Mr. G. Somers Clark, architect:—

Myers	21,570 0 0
Brown & Robinson	15,320 0 0
Mansfield, Price, & Co.	15,361 0 0
Fightingale	15,234 0 0
Kirk & Parry	15,770 0 0
Martwick & Thurgood	12,980 0 0
Mead & Rogers	15,740 0 0
John Kirk	15,740 0 0
Bayne & Hargreave	12,672 0 0
Chapell	15,170 0 0
Parsons	15,170 0 0
Kuby	11,967 0 0
Perry & Co.	11,960 0 0
Hill, Reddall, & Waldman	11,764 0 0

(accepted)

For ironwork, main drainage (contract No. 5), for borough of Brighton. Mr. N. C. Lockwood, borough surveyor:—

Went & Co.	£250 0 0
Went & Son	742 15 0
Waller	728 0 0
Waller	620 0 0
Spears & Archer	604 3 0
Reed & Co.	642 17 0
Waller & Rogers	604 17 0
Kirk, Condon, Sticks, & Co.	604 0 0
Sticks & Co.	604 0 0
Hartman & Cole	604 0 0
Lee & Urahman (accepted, subject to the approval of surveyor)	675 15 0

For villa residence and out-offices, for Mr. W. H. Brooker, at Walsall. Messrs. Nichols & Chamberlain, architects:—

Taylor & Sons	£206 0 0
Taylor	911 17 0
Wicks	820 0 0
Wicks	875 0 0
Morse	820 0 0
Bowley (accepted)	793 0 0

For re-building Nos. 48 and 49, Bishopsgate-street, for Messrs. Barker & Sons. Messrs. Taylor & Dale, architects. Quotations by Mr. Hirdley:—

Bewell	£5,576 0 0
Andry & Co.	4,440 0 0
Robinson & Co.	4,440 0 0
Johnstone	7,745 0 0
Rivett	7,691 0 0
Hirdley	7,680 0 0
Little	7,127 0 0
Parsons	7,127 0 0
Brown & Robinson	7,127 0 0
Newman & Mann	7,126 0 0
Quinn	6,980 0 0
Nightingale	6,947 0 0
Maitley & Rogers (accepted)	6,407 0 0



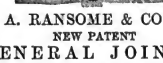
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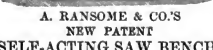
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THE ONLY WHITE LIME OF THE KIND WHERE NO
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Manufactory—24 and 25, NEWMAN STREET, OXFORD STREET, LONDON, W.—ARCHITECTS, BUILDERS, UPHOLSTHERS,
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SLATE BED. BEST CUSHIONS.
PERFECTLY LEVEL. EASILY CONVERTED. Price from £28.
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LONDON ORDERS MAY BE ADDRESSED TO 10, PARK STREET, TOWERMINT.

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ORDERS for the following MATERIALS executed at the LOWEST CURRENT RATES:—

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DARFIELD WHARF, 36a, BELVIDERE ROAD, LAMBETH, is now OPEN to the Public, for LANDING
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Materials sold for England and for Exportation, with instructions for laying down on various Works.
For Estimates, Prices, &c. &c. apply at the Office, 35, POULTRY, LONDON, E.C.

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Read at the Institute of Civil Engineers, apply to the Makers.

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Manufactured only by J. B. WHITE & BROTHERS, especially adapted for SKIETINGS, FLOORING, and INTERNAL STUCCO, on account of its superior Hardness.

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The best in existence; White as Snow, S.A. or S.H. Prevent
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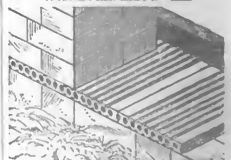
STEPHENS'S STAINS for WOOD,
A SUBSTITUTE for PAINT, and at HALF
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MR. STURROCK has been lately permitted to make public the following extract from a letter addressed to him by the Rev. R. H. CHIL, Minister, of Christchurch, near South Wotton :—

"The effort produced by the Floating Plate and Varnish has given such entire satisfaction, that the parishioners have requested me to procure five boxes the quantity now sold for, in order to finish the church."

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DAMP PROOF COURSE,
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TO PREVENT DAMP RISING IN WALLS.




Made in vertical slabs of glassware, 1 inch, 1 1/2 inch, or 2 inch thick, is capable to suit walls of various thicknesses, and possesses fire resistance. Delivered from London or Townsville.

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Also for the PATENT NEW ROOFING FILLS, which can be
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Designed by his late Royal Highness the Prince Consort
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Bath Fittings, Hot-water Apparatus, Porcelain Baza,
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JAWKSLEY'S PATENT STEPS

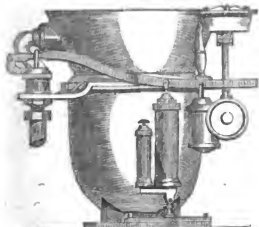


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RECOMMENDED FOR DURABILITY, REPLACES FIRE FIGHTING, CLASSIFIERS, and are positively NOISELESS.

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J. STONE & CO'S PATENT "UNIVERSAL" BRASS REGULATOR FOR WATER-CLOSETS.



ELEVATION OF CLOSET, WITH REGULATOR ATTACHED.

THE BEST AND CHEAPEST IN EXISTENCE.
THE PATENT "UNIVERSAL" BRASS REGULATOR contains all the advantages of the best Regulators of the day, including

Extreme Simplicity, Lubrication of Piston,
NOT AFFECTED BY FROST, WET, OR DAMP;
ACCURACY with which it can be ADJUSTED;

Together with the following additional advantages, viz.:-

It is MUCH the CHEAPEST.

The Oil required for LUBRICATING the PISTON can be applied by merely unscrewing the top of the small Oil-chamber, without at all interfering with the Regulator.

The Construction is such that it is next to impossible for it to get out of order.

Full particulars on application to

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F. G. UNDERHAY'S NEW PATENT BRASS REGULATOR CLOSETS.



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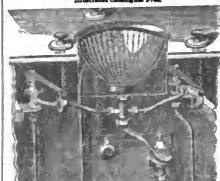
BRASS REGULATOR

Entirely resists all effects of WET or DAMP, and will not require repairing for many years.

Many thousands are now in use, and references can be given to some of the largest buildings in the United Kingdom and the Continent.

CRAWFORD PASSAGE,
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J. TYLOR & SONS' PATENT FLUSHING LAVATORY APPARATUS.



The dirty water is let out at the bottom of the Basin, and the hot and cold discharged into Basin through the holes round the top washing the dirt off the sides down the waste immediately. The objectionable return of dirty water up bottom of Basin is entirely removed.

To be seen in action at

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PATENT CAST LEAD TRAPS.



4 inch, 3 in. 6 inch, 2 in. 1 1/2 in. 1 in. 3/4 in. 1/2 in. 1/4 in.

No. 21, NEWCASTLE STREET, STRAND, LONDON, W.C.

They are manufactured of PURE PIG LEAD, without Solder or Seam, and are as clean inside and out as pipe made by hydraulic pressure.

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Patentees and Sole Manufacturers
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And Manufacturers of all Plumbers' Brass-work.



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The only SILVER MEDAL given to GREAT BRITAIN specially for "POTTERY." (Stoneware Pipes, &c.), for Materials and Processes for Civil Engineering and Public Works, has been awarded to

HENRY DOULTON & CO. LAMBETH.

Messrs. D. & Co. obtained Three Medals at the Paris Exhibition of 1867, for their various Manufactures.

GLAZED STONEWARE DRAIN PIPES, TERRA COTTA CHIMNEY TOPS, &c.
Supplied on the lowest terms, direct from

H. D. & CO.'S MANUFACTORIES, HIGH STREET, LAMBETH, LONDON;
BOWLEY REGIS, STAFFORDSHIRE; and SMITHWICK, near BIRMINGHAM.

QUALITY THE TEST OF PRICE.

DRAIN PIPES. KINSON POTTERY COMPANY.

Superior Glazed Stoneware DRAIN-PIPES; also Fire Bricks

WORKS: KINSON, near POOLE, DORSET. LONDON DEPOT: PRINCES STREET, LAMBETH.

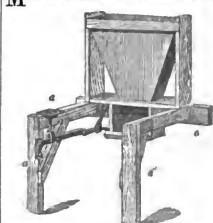
DAMP WALLS! DAMP WALLS!!
GAY'S IMPENETRABLE PAINT, THE ONLY SUCCESS,
EFFECTUALLY RENDERING HOUSES AND BUILDINGS, WHETHER OF STONE, BRICK, CEMENT, IRON, OR WOOD, IMPERVIOUS TO DAMP, OR THE INFLUENCE OF SEA AIR, WATER, SUN, OR FROST, &c. IN ALL COLOURS.

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MOULES PATENT EARTH SYSTEM.



DESIGNS FOR CLOSING AND PLATING FOR FIXING THE APPARATUS may be had at
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St. 9d.



FIGURE "D" STONEWARE CLOSING PAN AND TRAP, No. 24, COMPLETE.

PRIZE MEDAL SILVER MEDAL, GOLD MEDAL.

PRIZE MEDAL. SILVER MEDAL. GOLD MEDAL.

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ALLEN RANSOME & CO.

eg to announce that they have recently brought out
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MACHINES for Builders' and Contractors' purposes
comprising new Patent "General Joiners," Patent Saw
Cutting Saw Benches, Patent Double Deal Frames,
Portable Combined Timber and Deal Frames, Patent
Planing Machine, Patent Combined Planing and Moulding

g Machines, Patent Band Saw Machines, Improv
aw-sharpening Machines, &c.

**PARKINSON'S NEW PATENT
UNIVERSAL JOINER**
Sole Maker: A. RANSOME & CO.

This machine has been invented by a practical Joiner, and contains a great many improvements never before introduced into machines of the class known as "General or Universal Joiners." It is the most perfect of which any full sized saw is made. It will plan, groove, bevel, edge, and thickness boards to 17 lines, and will work on all kinds of timber, or materials, in one operation, whereas the most perfect "General Joiner" now produced will only plan two sides at a time.

...circular work up to 10 inches thick. It will mould and release circular or circular mouldings of any pattern. It will form single or double cones at one operation, and make the shoulders of the same time.



PORTABLE COMBINED

TIMBER AND DEAL FRAME

IMPROVED SAW SHARPENER
This Machine requires only to be known to be universally adopted
sawing in saw film and labour being equal to the nature and
the Mac: ion several times over in the course of twelve months.
ALLEN RANOMER & CO furnish plans and estimates of cost

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Cutting Saw Benches, Patent Double Deal Frames,
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Planing Machine, Patent Combined Planing and Moulding

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aw-sharpening Machines, &c.

PARKINSON'S NEW PATENT
UNIVERSAL JOINER
Sole Maker: A. RANSOME & CO.

This machine has been invented by a practical joiner, and contains a great many improvements never before introduced in machines of the class known as "General or Universal Joiners." Among the most important of which are the following:—

1st—It will plane, groove, tongue, edge, and thickness boards to 1/2 inches wide, or will work on all four sides of a moulded at one operation, whereas the most perfect "General Joiner" yet produced will only plane two sides at a time.

2nd—It is mounted with a concrete feed box, for each

thly.—It will mould and rotate circular shapes, or stick curves, or circular mouldings of any pattern.

thly.—It will form single or double cones at one operation, and describe the shoulders at the same time.



PORTABLE COMBINED

TIMBER AND DEAL FRAME

This Machine is arranged so that it can be adapted for sawing
timber round or square, or deals: two deals or flitches
and wood passing through the Machine at the same time.
It is quite self-contained, being fixed on a cast iron foundation,
and requires no heavy foundation.

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IMPROVED SAW SHARPENER
This Machine requires only to be known to be universally adopted
serving in saw film and labour being equal to the entire and
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ALLEN RANDOLPH & CO furnish plans and estimates of cost
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DESIGNED AND GUARANTEED AS TO STRENGTH.

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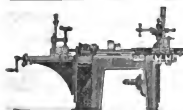
THE ONLY SILVER MEDAL, Paris, 1867; GOLD MEDAL, Bombay, India, 1884; and THE PRIZE MEDAL, London, 1862.

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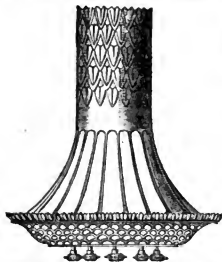
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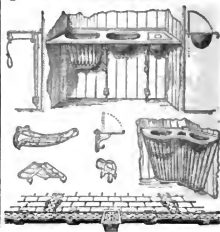
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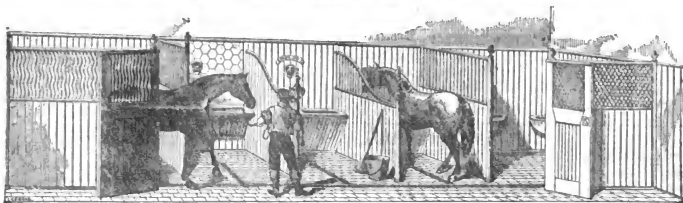
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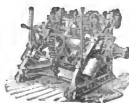
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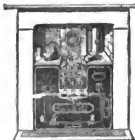
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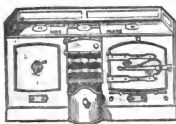
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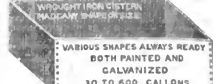
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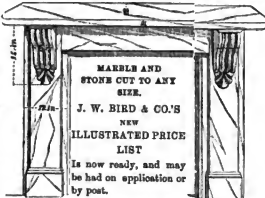
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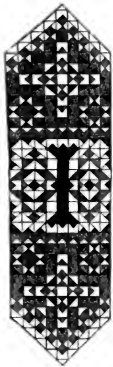
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The Builder.

VOL. XXVIII.—No. 1421.

Piccadilly and Pall Mall.



N the days when Charles II. sauntered and loitered in St. James's Park, feeding the ducks at the decoy; chatting with Storey, at Storey's Gate, about the necessary "wyce," books, "polles," and rascals, for their island; passing on to the antelope, Arabian sheep, Guinea goats, and other zoological items newly presented to him, and located in an inclosure there; watching the 300 workmen expeditiously forming the canal at his command; glancing at the orange-trees in boxes, that reminded him of his continental exile; approving the long, smooth, mall strewn with cockle-

shells for the game of pall-mall, and sending, too, the ball flying often, as Waller sings, "as from a smoking culverin 'twere shot;" planting trees; or passing into the palace garden, watering the acorns planted from the Boscobel oak, and shocking Evelyn with light talk with Nell Gwynn over the top of the garden-wall,—two hundred years ago, in fine, Piccadilly and Pall-mall, with the district lying between the Haymarket and Hyde Park, with its surroundings northwards and southwards, were undergoing the process we have seen carried out in our own day in Belgravia, Westbourne, Tyburnia, South Kensington, and Notting-hill, among other places. The broad green pastures north of St. James's Park were laid out in streets; and St. James's Fields, with the hay-scented Hay-hill Farm, were swiftly covered with mansions. Streets and houses spoken of as the westernmost of the new buildings, within a short period were hemmed in with fresh erections. A new court suburb, in fact, arose, which extended as far as Berkeley House, on the road to Hyde Park; the intermediate space between the toll-pike at this spot and a cluster of cottages at Hyde Park-corner being occupied with the "figure-yards" of stateries.

Lord Clarendon was the first nobleman who built himself a residence in this new district. His example was followed by Lords Burlington and Berkeley, who built to the east and west of him on the same highway leading into Hyde Park. At the same date the Earl of St. Alban's planned St. James's-square. Shortly afterwards, the widow of Lord Berkeley built Berkeley-street and Siraton-street. A church was required for the new district, and accordingly St. James's Church was built, on ground belonging to the Earl of St. Alban's, with its front to Jernyn-street, then a more important place than "y highway unto Hyde Park" we now call Piccadilly; for the Duchess of Richmond and Colonel Churchill lived in it. Sir Christopher Wren designed this edifice, Gibbons beautified it with its carvings, and Evelyn wrote of it, "There was no altar anywhere in England, nor has

there been any abroad, more handsomely adorned." Archbishop Tenison was the first rector; and a large and fashionable congregation immediately filled it. Closer to St. James's Palace the dainty Duchess of Cleveland built Cleveland House, and sold land round about it, on which more houses were built. Good houses were erected in Pall-mall, and inhabited by persons of fashion, Nell Gwynne being one of them. St. James's-place, Park-place, Arlington-street, Saville-street, known as the longest in London without a turning; Bond-street, called after Sir Thomas Bond, of Peckham, comptroller of the household to the queen-mother and friend of James II.; Albemarle-street, Dover-street, besides all the streets departing from and surrounding St. James's-square, rose on all sides. The house newly finished by Lord Clarendon was speedily taken down that streets might occupy its site; and building operations were the fashion of the day. The noblemen who had shared the fortunes of Charles, or kept up communication with the royal exiles on the Continent, were possessed, as it were, with reminiscences of the splendour of foreign palaces, and strove to produce an approximation to them. Evelyn wrote of Berkeley House, "It is very well built, and has many noble rooms, but they are not very convenient, consisting but of one *corps de logis*. They are all rooms of state, without closets. The staircase is of cedar; the furniture is princely." And of Clarendon House, "I pronounce it the first palace in England, deserving all I have said of it, and a better encomiast." And again, when he deplored the demolition of the one and the building on the grounds of the other: "To such a mad intolerance was the age come of building about a city, by far too disproportionate already to the nation: I having in my time seen it almost as large again as it was within my memory."

The site of this "mad intolerance" has now been made the subject of an interesting volume entitled "Round about Piccadilly and Pall-mall."* Mr. Wheatley shows us the London of Evelyn and Pepps; of Sir Charles Sedley and Henry Jernyn; of Sir Peter Lely and Sir Godfrey Kneller; of Moll Davis, Mary Knight, Nell Gwynn, and the rest; of Arabella Churchill and Sarah Jennings; of Philibert Grammont, Charles Sackville, Roger L'Estrange, of the credulous who consented Lilly, and of the savans who looked up to Boyle. His picture is dated after the Restoration; and there are the new streets, compared with the gabled painted overhanging timber houses of the City before the fire, clean, cool, wide, and straight. He tells us who built them and who lived in them: in plain terms and neutral tints; rather, perhaps, too plain and too neutral; for brighter colours might have been used with advantage, as, by right, the subject is entitled to more than mere catalogue precision. It was a period of magnificence and art-patronage as well as of licentious gallantry, and the brush must be often steeped in brilliant hues that would rightly depict it. Intermixed with the outskirt of this new district are the extensions made in the next century, which covered Mayfair, created Berkeley-square, continued the line of houses in Piccadilly to Hyde Park-corner, and crept down Park-lane; the London of Addison, Steele, Pope, Gay, Swift, Prior, and Prior's Kitty, of Garrick and Hogarth. In the *Weekly Journal*, of June 1st, 1717, there is a paragraph:—"The new buildings between Bond-street and Mary-le-bone go on with all possible diligence; and the houses even let and sell before they are built. They are already in great forwardness." Defoe, in his "Tour," wrote, "Several fine new streets, as Hill-street, Charles-street, &c., are built near Berkeley-square and

* "Round about Piccadilly and Pall-mall; or, a Ramble from the Haymarket to Hyde Park, consisting of a retrospect of the various changes that have occurred in the Court End of London." By Henry B. Wheatley. London: Smith, Elder, & Co. 1870.

Mayfair, in a place which herds and herdsmen, very few years ago, only inhabited. But now the residence of many of the first gentry, equally splendid and convenient." And Horace Walpole declared, November, 1750, "I stared to-day at Piccadilly like a country squire; there are twenty new stone houses." Over and above the information connecting these districts with these times are further extensions and supplemental facts that bring the work in parts up to the present day.

Piccadilly is first described with the streets to the north and south of it; then Hyde Park, the Green Park, St. James's Park, St. James's and Buckingham palaces, Pall-mall, and St. James's-square.

Most of the houses of Piccadilly are identified with interesting associations. The three first great houses,—Clarendon House, Burlington House, and Berkeley House,—have three chapters set apart to them, in which are given a large number of facts relating to their building, builders, residents, and visitors. Clarendon House, we know, was pulled down in the lifetime of Evelyn, as he records the price paid for the purchase and realised by the old materials, and the intention to build a new town and most magnificent pinnas upon the site. Burlington House is now more widely known than ever; and Berkeley House, afterwards called Devonshire House, burnt down in 1753, and rebuilt by the third Duke of Devonshire, from a design by Kent, is to the full as glorified by association with wit, ract, and beauty as it has ever been. The less important houses are taken in rotation, beginning with Swan & Edgar's, on the north side, and coming round past Fortnum & Mason's, which Melbourn said, so appreciatively, would have been better named as Savory & Moore's, to the White Bear Inn, on the south side. In this double row of houses have lived or visited celebrities almost without number. Handel, Kent, and the *dansette* Violette (Mrs. Garrick) were domiciled in Burlington House in the time of the celebrated third Earl. Fox lodged at an oilman's in this street; and his father, Lord Holland, also lived in it, in 1771. William Beckford, the author of "Vathek;" George Selwyn, Verrio, the painter; the Earl of Sunderland, described by Queen Anne, passionately, as the "sabbilistest workin'g villain that is on the face of the earth;" Sir Francis Burdett, Lord Byron, Sir Thomas Lawrence, Sir William and Lady Hamilton, Madame d'Arblay, the Ear. of Coventry, who married the beautiful Miss Gunning, the Duke of Queensberry, and Lord Palmerston, are mentioned by Mr. Wheatley as having, at various times, occupied houses in Piccadilly. In the Albany, too, have lived Lord Byron, Canning, Macanlay, Smirke, Gell, Lettrel, and "Monk" Lewis, among other notabilities. But it is as the Great Western-road, with toll-pike at intervals; highwaymen scarcely far apart; "figure yards" adjoining one another; groups of "fine gentlemen" passing along it to "take the air" in Hyde Park or try their luck at the gaming-house, either at bowls or cards; coaches full of the "quality" stuck fast by reason of the badness of the ways, or on their road to race each other in Hyde Park; with knots of passengers staring at the calash the Count de Grammont had had made in Paris and presented to the King, and which Lady Castle-maine and La Belle Stuart both importuned him to lead them as soon as they saw it; or at the Duchess of Cleveland, standing up in her chariot to call Wycherly a rascal; or at Kynaston, the handsome youth the actor of female parts, who, dressed in his stage costume, was made much of, and driven round the park by ladies of fashion directly the play was over, that we find most contrast to its present condition. Mr. Wheatley goes into the question of the origin of the name Piccadilly, and, after arraying all the facts he has been able to gather,

comes to the conclusion that the district was called Piccadilly, and the principal house on it Piccadilly Hall, which was a distinct building to Sharners' Hall, or the great gaming-house, which was, also, from its situation, spoken of as Piccadilly. He believes Higgins the tailor, mentioned in Blount's "Glossographia" as the builder of the gambling-house, to have been a myth. Yet we find it written in the "New World of Words," compiled by Milton's nephew, as a definition of the word Piccadilly, "the linen about the skirt of a garment; the twenty or almost end of anything; whence a great gaming-house, built by one Higgins, a tailor, famous for making such old-fashioned skirts, was called Piccadilly, and a street in the suburbs of London is still known by that name;" showing the myth was taken to be a fact at that date. The pickadille was a name also given to a particularly shaped coat, alluded to by Colgraves, Barnaby Rudge, Overbury, Middleton, Fletcher, and Drayton.

Speaking of the "Junior Athenæum Club," at the corner of Down-street, the author says the Club bought the house "from Mrs. Hops for £1,650L., and in addition they have to pay a ground-rent of 500L." This is not quite correct. The sum paid to Mrs. Hops was 45,000L., the remainder of the amount named was the cost of furniture, fittings, repairs, and alterations.

When we come to Pall-mall, the highway between St. James's Palace and Charing-cross, we seem, more distinctly still, to step back into the days of the Stuarts. It was then a roadway, bounded on the south by the wall of the park, and on the north ran an avenue of trees forming a mall, with a few small houses on the south side. A grant was made of a piece of ground 1,400 ft. in length, and 33 ft. in breadth, to Dan O'Neale, groom of the bedchamber, and John Donham, surveyor of the works, "between St. James's Park and Pall-mall," and the new street was commenced forthwith. It was at first spoken of as Catharine-street, in honour of Catharine of Braganza, but on the formation of the new Pall-mall in the present distinguished site as the Old Pall-mall, in the Act for creating the parish of St. James, 1685, the transition is indicated in the title, "Catharine-street alias Pall-mall-street." Dr. Bydenham appears to have been one of the earliest and longest residents. To his house flocked the "quality" with their conflicting complaints, amongst which the spleen was as troublesome as aury, and if there were courtiers not upon his list of patients, we may conclude that these, some time or other, consulted another resident in the same street, Dr. Haworth, physician to James II., when Duke of York. A sedan-chair stand became one of the institutions of the street, and many a bright "loaf of the Iowa" has been carried in these conveyances through this pleasant thoroughfare. We may be sure that the distinguished residents, the occupants at Joseph Clarke's, the post-mortem master, whose extraordinary flexibility enabled him to puzzle surgeons and tailors alike; and at Lord Bellingbrooke's, when he returned from exile; and at Mrs. Delany's. Gay came often to Lord Bellingbrooke's, and he wrote of the street, entranced:—

"Oh, bear me to the paths of fair Pall-mall,
Bids are thy parterres, grateful is thy smell;
At distance looms along the gilded coach,
For sturdy carmen on their wheels enroach," &c.

Steele, Sterne, Gibbon, Quin, Mrs. Abington, were among the later celebrities who lodged in the street temporarily. Defoe wrote in 1703, "I am lodged in the street called Pall-mall, the ordinary residence of all strangers, because of its vicinity to the Queen's Palace, the park, the Parliament House, the theatre, and the chocolate and coffee houses, where the best company frequent." Mr. Wheatley quotes, too, the lines of Charles Morris as another indication of the esteem in which this thoroughfare has been held:—

"In towns let me live, then, in towns let me die;
For in truth I can't tell the difference;
If one must have a villa in summer to dwell,
Oh give me the sweet shady side of Pall-mall."

As a specimen of the mode in which the different subjects are treated, we will quote a portion of Mr. Wheatley's description of another celebrated mansion, Chesterfield House.

"The chief glory of Mayfair is the fine mansion, Chesterfield House, in South Andley-street, which was built by Isaac Ware, for the great Earl of Chesterfield. Its present position, surrounded by streets and houses, is very different from what it was 120 years ago. The earl's friends were surprised at his having chosen so desolate a place, and he himself said that he re-

quired a house-dog, as he had situated his house among thieves and murderers. This, however, was soon changed, for Chesterfield House became a centre, and the fashionable world came and settled round it. Although the exterior of the house is pretentious and without elegance, the interior is fine, and the earl was justly proud of it. He watched its progress with the greatest interest, and wrote lovingly about it to his friends. . . . He was proud of the large courtyard in front, and the large garden behind, two things rare in London, though then common in Paris. In March, 1740, he writes to his friend, Solomon Dayrolles:—"I have yet finished nothing but my boudoir and my library; the former is the gayest and most cheerful room in England, the latter the best." . . . One room had a large looking-glass made up of pieces, but with all the joints painted over with Cupids and roses; another had a mandarin's dress constructed to represent gilt tasselled ropes. The Italian drawing-room, besides its splendid glass chandelier, had a noble marble mantelpiece, with standing figures." Mr. Wheatley denies that this house is about to be pulled down.

The author, though not giving very clear architectural descriptions, makes special mention of the marble staircase as the great feature of the house. This was originally at Cannon but was purchased from the Duke of Chandos by the earl when that seat was taken down. The ill character of the neighbourhood alluded to in the requirement of a house-dog is borne out by the fact that Jack Sheppard lodged in Mayfair; but we must consider it gilded, if not altogether changed, when we count up the number of royal personages who have since lived in Regent-street. Louis XVIII., Charles X., Eugénie, Duke de Chartres, and Queen Caroline have all been residents.

The parks are always pleasant subjects for comment, and Mr. Wheatley places them in their usual agreeable light. There are several illustrations giving views of different portions and the names of the parks. In a plan of St. James's Park in the reign of Charles II., reduced from a plan in Kip's *Théâtre de la Grande Bretagne*, we can see the palace, with Cleveland House nestling close against it, and the Mall stretching out on both sides of it as straight as an arrow, the canal crossing the park horizontally, and, equally straight, Rossmore's Pond at the head of it, divided from it by a row of avenues or trees, the Dock and Dacey Island at the other end, and the Admiralty, Horse Guards, Tit-yard, and Cock-pit close by. There is a good account of the famous pond in which so many sixteenth-century suicides took place. It is rightly stated that it was filled up in 1770; but it might have been added that another pond in the Park received the name, and bore it, seventy years after that date. There is a plan of the Constitution-hill in 1748, an open piece of country, with a carriage and four, horsemen, and a few foot-passengers on the unfenced road. Mr. Wheatley reminds us it was the scene of the meeting between Charles II. and his brother, when the former, in reply to the congratulations of James, remarked,—"No kind of danger, James, for I am sure no man in England will take away my life to make you king." We are shown, too, the Ranger's Lodge in the Green Park, and the Chesscock House in Hyde Park, taken down in 1835. This last the author identifies as the "Grave Maurice's Head," famous for cheese-cakes, tarts, and syllabubs in the reign of James I., and mentioned twice in Shurley's play of "Hyde Park," one of the chancery decisions, a bubble has been cast for from the "Marionette" and another that the wine was good, because "it comes from his excellence's head." Our fashionable forefathers were fond of poetry: not only did they consume "maids of honour" at Richmond in large quantities, but they gave the nickname of Tart Hall to a house in Piccadilly at this time, and were not long before they furnished a large trade to the Chelsea Bath-house. Very good were the syllabubs, doubtless, to the visitors in Hyde Park, if the fashion long prevailed to hunt the most distinguished visitors, as described in a letter to Mr. Scudamore from "J. B." quoted by the author from *Notes and Queries*.—"When my Lord Protector's coach came into y^e park wth Col. Ingoldby and all y^e lord's daughters only three of them all in y^e green. Y^e coach and horses flocked about them like some miracle, but they galloped after y^e mode court-pace now, and wth they all see where-ever they go, round and round y^e park, and all y^e great multitude hunted them, and caught them still at y^e turns like a hare, and then made a lane with all

reverent haste for them, and so after them again, that I never saw y^e like in my life." There were 120 coaches present,—the first the writer easily ascertained, because each paid an entrance toll of 2s. 6d., and every horse was charged 1s. The catching of the ladies Cromwell at the turn is explained by the Frenchman Mison, who relates, in his mention of the "diversion of the ring," that the coaches of the company drove round and round; but "when they have tired for some time round one way, they face about and turn round; so rowls the world." Things have little changed.

As we have mentioned the illustrations of the parks, we will add a list of the houses shown in ours. First, there is Hyde Park-corner with Apsey House in 1800; then come Melbourn, or York House, now the Albany; Hertford House (formerly Barrymore House), which is No. 105, Piccadilly, built for the Duke of Devonshire in 1682, described by his widow as the "late famous sculptor's" Old Apsey House, 1828, when it was a red-brick mansion as designed by the brothers Adams, and innocent of the facing of Bath stone it has since put on; three views of Burlington House, the original structure, set in its long prim garden, and showing the slip since carried into Burlington House, the original structure by the third earl, taken from a photograph in 1868, and a view of the colonnade, saved only just in time from being dispersed as old materials and now awaiting its fate in Battersea Park, with a fourth set of the old brick curtain wall, now demolished, that was one of the curiosities of London in its time; Queensberry House, where Gay enjoyed doing hospitality so long, the representative of the House of Marchal, Wade's house, in Old Burlington-street, built by the third Earl of Burlington, and said to be too small to live in and too large to hang to a wraith child; Clarendon House, 1697-83; Devonshire House, 1808; Chesterfield House, Buckingham House in 1748; Sohamberg House; and the seven of Carlton House. The Old Haymarket Theatre, and the entrance to the Opera, in the previous to 1820, are also shown; and there is a map of the district surveyed, and a view of one of its principal features, St. James's-square.

Half the frail ladies of the court seem to have flocked to the piazzas, as this last-mentioned square was first called, directly it was built. Arabella Churchill and Moll Davis lived next door to one another in it, Nell Gwynne, and he who is said to have received an edict for giving her up to the king, Charles sackville, Earl of Middlesex, also lived in it; and Catherine Sedley, when sent from court, had a home furnished for her here, and, showing how curiously open sin of one sort was considered compatible with religious observances, "a seat taken for her in the new consecrated St. Ann's Church." The names of the houses with their respective superior reputations are associated with the new piazzas; for at No. 6, lived John, Lord Hervey, who married the lovely Molly Lupell, and his son, who married Miss Chudleigh; and at No. 10 lived "Ada," sole daughter of my house and heart," the Countess of Lovelace. Scarcely, indeed, is there a house in the square that has not been inhabited by some well-known personage. It has been, too, focus of curious and splendid assemblies. One hereditary Prince of Tuscany was lodged in the Earl of St. Albans' house here in 1699, and in honour of the king's birthday gave an exhibition of fanciful fireworks to the populace, and distributed several oaks of Italian wine and beer to the admiring crowd. William III. supped with Earl Romney "in St. James's-square," and the Earl of Albemarle, the grand display of fireworks there soon after his accession; and again, a second display, before the house of the Dutch Ambassador, with a bonfire of 140 barrels of pitch, and a great distribution of wine, in commemoration of the peace. When the Earl of Ormonde was recalled from Ireland by James II., he was escorted to his residence in this square by a great growing multitude, "a Janus," says the story, by the Earl of Castlereagh's house in it. Another great crowd came pouring into the square when Mayor Percy arrived with the three French eagles that were substantialities of his news of the victory of Waterloo; and others to see Queen Caroline pass in state daily to the House of Peers, in 1830, from the house formerly occupied by the reputed author of "Janus," says the story, by the Earl of Castlereagh's house in it. Another great crowd came pouring into the square when Mayor Percy arrived with the three French eagles that were substantialities of his news of the victory of Waterloo; and others to see Queen Caroline pass in state daily to the House of Peers, in 1830, from the house formerly occupied by the reputed author of "Janus," says the story, by the Earl of Castlereagh's house in it. 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company with high heels and powdered hair, that made Alcock their headquarters in his best days. The character of the place is best laconically expressed, perhaps, by the fact that Richardson placed the residence of Sir Charles Grandison in it. It was linked to the domains of art by Wedgwood, who had his show-rooms here. Leigh Hunt tells us he has walked down Sackville-street more than once, that he might tread the same stones Mrs. Ingheld trod as she watched the light in Dr. Warren's window. Surely, with the same regard for what is worthy, we might linger in this square for a summer's day, and not exhaust its associations.

Mr. Wheatley has done much to intensify our enjoyment of this district; more, even, than the Earl of Burlington did when he painted the rail-gauges before his house with ultramarine at ten guineas per ounce. Nevertheless, there will be several things that he will not find so easily requisited. Like the sailor that supplied three persons to make it, including a man-of-war for mixing, the treatment of such a subject calls for many gifts. We must be content if the materials furnished are full and correct; and be ready to throw in, as we read, the feeling and fancy they may evoke in the promise our readers many moments of realisation, and the pleasure of pleasant reverberations from them before they have walked in half the footsteps pointed out.

THE SIXTY-SIXTH EXHIBITION
OF THE SOCIETY OF PAINTERS IN
WATER-COLOURS

It is impracticable, within the limits at our disposal, to attempt anything like a classifying criticism of the 261 water-colour drawings, of which a most of them may more appropriately be called, "paintings in water-colours," which compose the attractive exhibition of the present season. All we can attempt is, to point out a few of those which most readily strike the attention of the visitor, or which, in our judgment, have the highest claim to something more than a passing glance of admiration. The general character of the drawings is good; and there are a few of sufficient merit to be known basis, which call for the careful study of the student, no less than that of the critic.

Of those craftsmen of their craft who work
 speak so distinctly from the walls of the Pall-
 Mall Gallery, the first name that occurs is one
 which is prefaced with the sad words "the late."
 Rosenberg has lost its cunning. Independent
 of this special claim on our regret and our
 sympathy, the purely artistic qualities of
 many, not to say of all, of the seven drawings
 are of a high order. Some of the drawings have
 a very striking character. We see ample evi-
 dence of a rare power, first to seize a special
 aspect of nature, to apprehend it in its very
 essence, and then to project it upon paper. The
 drawings are not the work of a chemist, but
 by the arts of the chemist, but they are life-like
 reproductions, in which the master-thought of
 the scene gives tone to the whole. Thus in the
 "Ice Plough—the Glacier at Bawr Base, Nor-
 way," the artist has shown that he has seen
 the given ice is a marvel of artistic felicity.
 The dark green of the foliage that clusters round
 the double-pointed gateway of "Goodrich Castle"
 again looks like a bit of ivy brought into the
 drawing. The drawing of the "Interior of
 "Interior of Tintern Abbey" (55) is a less
 accurate production; but as a specimen of a
 pure, broad, level touch, filling a large surface
 with a fine reproduction of a noble ruin, it

studies as administrator.

As a painter, he has been living, one of the first places in the present century must be awarded to Carl Harg, who contributes four pictures of rare and striking merit. We have no room to enter into the question of the new style of art which is developing out of what was once water-colour drawing. Whatever it may hereafter become, water can trace not only change, but produce it. We have had the last months. And it is with the more hope that we shall see the use of a very hazardous experiment when we see it in progress under the hands of a master who can, at all events, when he chooses, produce a water-colour drawing, pure and simple. Such is "The Estrance to Ancient Samaria" (171). Such is the architectural landscape, forming the hues of the sun, sunlight, that forms the background to "The East Wind" (172), a striking physiognomy of "Sheik Michael al Musrah," at Palmyra (68). The fine boarded fan (9), with

the play of iridescent colour on the stick and the folds of the robe, and the dark-eyed "Semitic Belle" (38), are portraits that refuse to leave the memory.

Of the two contributions by Mr. Holmen Hunt we can only remark that, proceeding from the pencil of an artist of such acknowledged power of misdeed and elaborate finish, they ought to be labelled "Note on Colours," "Rough Sketches," or "Pencil Studies." The artist is signified by the title to show that they were only intended to enrich the artist's own memory, and serve for the basis of future paintings. The glow of the "Sunset at Chimadity," audacious and violent as it must seem to English eyes, is a fine example of the artist's power to draw shimmer on the paper till you almost withdraw the eye. But in the queerly-drawn foliage in the foreground, the light shines on the wrong side of the plants. They must have been drawn in the morning, and would have had a totally different effect if they had been interpreted through the eyes and the purple glow of sundown. Again, the strange, Madisav—almost Japanese—conventional hawk which represents the sun in the "Festa at Fiesole" (71), does produce on the eye the effect of that old peeping through a keyhole, how much is requisite in order to form his hint, and how much is to be told the head of the little boy who drops his drum be so grotesquely disproportioned? Why should trees, and girls, and musicians, be lined up by heavy touches like the efforts of a child with a brush? The artist can escape the penalty of taking liberties.

Mr. C. J. Pinwell's "Elisir of Love" (114) is one of the pictures that first catch the eye. It possesses much merit. The expression of the faces is often very tender,—always very true, and the sentiment is very pleasing. But the composition has not been kept within the limits of propriety and delicacy. The composition, in the want of which is instinctively felt, alone could have brought those fiery figures together in such close contact. The cathedral is built of large stones, made of *terra cotta*. The ground is of no superterrestrial material at all. This clever artist has not been able to give his figures a position, or to take the rank his powers entitle him to render. Mr. Gilbert's "Arrest of Guido Fawkes" (No. 104) is, it is unnecessary to say, very clever, and tells the tale well. The defiant attitude of the bound ruffian, and the frightened expression of the striking king, are admirable; and the soft cheek of the woman who is embracing the man who is shrinking the cords beneath the roughness of the prisoner. But the king, although sufficiently contemptible, is not, as James VI., who, by the way, was not hampshire, as Mr. Gilbert's sovereign appears

Mr. Brauwin has some remarkable instances of power over the pencil. His "Early Moonlight, a Blank Frost" (No. 29) is a perfect photograph; and we think that in this, and perhaps one or two other instances, the artist has been able to produce a picture of nature, transcending of nature. Mr. Birket Foster's "Weald of Surrey" requires to be seen at a certain distance, and then gives the swell of a rich English landscape. We have by no means seen a more beautiful picture than "The Old Mill, near Epsom." But we must claim admiration for No. 229, "Lighthouses, Messina, Calabria," by Mr. T. M. Richardson. Of what a water-colour drawing should be, in the opinion of those who hold with the early method of the water-colourists, this is a fine example. The room. The scene is admirably chosen, lovely in itself, well arranged as a composition on the paper, and produced by those clear, glowing touches of pure colour, with exactly the right amount of detail and of finish that were the characteristic of the water-colourists who founded the English school of water-colours.

Mr. E. Burne Jones shows, with some eccentricities, qualities of very high order. His "Phyllis and Demophoon" (154), and "Love disguised as Reason" (64), will gratify others besides his own circle of unqualified admirers.

Mr. Gastineau, the Nestor of the Society, exhibits some pictures that all must think remarkable when the number of years during which he has practised the art is remembered; and few persons will visit the gallery without noticing (24) "Waiting for the Ferry-Boat," "Waiting Gales"; (64) "Evening," Brittan Willis; (66) "Castel Nuovo, Naples," E. A. Goodall; (94) "Vessels running for Yarmouth Roads," Duncan; (145) "Interior of Milan Cathedral," A. Read; and others.

THE ART-UNION OF LONDON ANNUAL
MEETING.

THE 34th annual general meeting of the members of this institution took place on Tuesday last, on the stage of the Adelphi Theatre (by the kind permission of Mr. Benjamin Webster), for the purpose of receiving the council's report, and for the distribution of the amount subscribed, with a view to the purchase of works of art during the year 1870; Lord Houghton, the president, in the chair.

Amongst the company were—The Dean of Canterbury, Professor Donaldson, Mr. John Martin, Mr. J. Fahey, Mr. G. Reid, Mr. J. B. Bitterworth, Mr. J. Hopgood, Mr. Lewis Pocock, and Mr. E. E. Antrobus (hon. secretaries), Mr. Lamb Stocks, A.R.A., &c.

FOUR

The Council of the Art-Union of London, in presenting their thirty-fourth Annual Report, have the satisfaction of stating that, in spite of the depression existing in all mercantile operations, not only in this country, but in the colonies and abroad, the popularity of the work presented to the subscribers has raised the amount collected to £10,716*l.* 10*s.* 6*d.*

The engraving to be presented to the subscribers for the ensuing year, "Light and Darkness," from a picture by Mr. George Smith, is of a subject differing in many respects from those which have been hitherto selected, being of a domestic character, and eminently calculated to awaken sympathy, not only for the Blind Girl, but for the good work she has undertaken.

A Scripture-reader, deprived of sight, she endeavours, by means of that simple but admirable invention which modern science has discovered, in impart to those around her, truths which she herself has learnt to appreciate. The subject of the engraving is a young woman, the countenance of the blind girl is earnest and impressive, while the effect of her teaching and enthusiasm upon the faces of the several members of the family by which she is surrounded, is exultingly depicted. The aged grandparent, the mother, the sister, and the young husband, the countenance of the young man, mother, the energetic approval of the sister, are in strong contrast with the undecided expression on the countenance of the husband, wavering between the influence of a drunken son-in-law and of the influence of the reader. The engraving, the Council believe will prove a valuable example, and acceptable to the subscribers of the Art-Union.

The Council have secured for the Society a very fine copy in chromolithography, by Messrs. Kell, of a drawing Bellagio-Como, by Mr. Birket Foster, a number of impressions of which will be distributed on this occasion.

Vacancies in the Council, caused by the retirement of Thomas Bell, esq., F.R.S., and James Anderson Rose, esq., F.R.S.L., have been filled up by the election of the Hon. Alfred Bacro and the Rev. Dr. Mortimer.

The Council have, as usual, to return their warm thanks to the local honorary secretaries and agents in every quarter of the globe for their continued zealous endeavours to spread the influence of the Society.

In spite of the depression in almost all our colonial dependencies, and the almost prohibitory amount of the duties, and dearth of money in the United States, they have to record very fair returns. Amongst a large number who merit our thanks, Mr. Dure, of Yokohama; Messrs. Eyre, Frazer, Hawke, Sherriff, and Wilkie, in Australia; Messrs. Potter, of St. John, and Estomero, of Halifax, deserve particular notice as sending in large quantities of goods. And, from the colonies in New Zealand, good lists have come from our representatives in that place.

The accounts have been audited by three members of the Finance Committee and two gentlemen from the general body of subscribers, namely, Mr. G. J. Fearis and Mr. W. Wright, to whom the thanks of the Council are offered.

The Reserve Fund now amounts to 15,695*l.* 12*s.* 9*d.*
The following is a brief summary of the receipts and
expenditure; a detailed account will, as usual, be printed
in the Report:—

Amount of subscriptions	£10,710 10 6
Cost of prints of the year, report, exhibition and albumen, including reserve of 2½ per cent.	4,101 13 11
General printing, rent, salaries, &c.	5,466 17 11
Net spare for prizes	4,500 0 0
Total	10,710 10 6
The amount available for the purchase of works of art will be	
23 works at £10 each.	230
10 " " " " " " " "	100
10 " " " " " " " "	100
10 " " " " " " " "	100
6 " " " " " " " "	60
6 " " " " " " " "	60
4 " " " " " " " "	40
4 " " " " " " " "	40
2 " " " " " " " "	20
2 " " " " " " " "	20
1 work at £100	100
1 " " " " " " " "	100
2 " " " " " " " "	200

There will also be distributed :—

20 Bronzes of the Nelson Column.
200 Chromolithographs, "Bellagio."

Thus, with the parian basis given to all who have subscribed for ten years consecutively without gaining a prize, there will be 476 prizes, in addition to the work men to every member.

The works selected by the prizeholders of last year were, as usual, exhibited in the Gallery of the Institute of Painters in Water-colours, and large numbers visited the rooms; although, from the greatly increased number of exhibitions open to the public in the present day, our gallery does not attract the throng of visitors which, in former times, on the evenings when it was open, made Suffolk-street well-nigh impassable. The Council have again satisfaction in stating that the quality of the works

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of newspapers, is not exempt (Q. v. Brads, 20 L. J. R. M. C. 119; Q. v. Gaskell, 21 L. J. R. M. C. 29; Russell Institution v. St. Giles-in-the-Fields, 23 L. J. R. M. C. 65).

A mechanics' institution, some of whose rooms are occasionally let out for concerts, lectures, and public meetings, is not exempt (Parry v. Trull, 19 L. J. R. M. C. 87); nor is a subscription library, if a part of its premises is let off to another scientific society (Earl of Clarendon v. St. James's, Westminster, 20 L. J. R. M. C. 213).

National schools, hospitals, dispensaries, and other similar properties held for public purposes only, where the trustees derive no personal pecuniary profit for themselves, have, until very recently, been considered to be exempt from rates; but the case of the Mersey Docks and Harbour Board v. Jones and Another (30 L. J. M. C. 590), carried by appeal from a judgment of the Exchequer Chamber to the House of Lords, has established the contrary rule. Six of the judges assisted the Peers when the argument was heard, of whom five expressed opinions that the exemption could not be supported. The remaining judge considered that the exemption had been established by a long current of authorities, and could not now be rejected. Since this decision was given, the "Sunday and Ragged Schools (Exemption from Rating) Act, 1869," has been passed, by which every authority having power to impose or levy any rate, may exempt from the payment of the same any premises whatever any building or part of a building used exclusively as a Sunday school or ragged school.

Much litigation has arisen, in connexion with the assessment of buildings, concerning the rateability of fixtures, trade plant, and machinery. It was decided in the case of *The Queen v. North Staffordshire Railway Company* (30 L. J. M. C. 68), that buildings to which machinery is attached for the purposes of trade, are assessable to the extent of their existing value, as combined with the machinery, whether such machinery be real or personal property. In the case of *The Queen v. North Staffordshire Railway Company* (30 L. J. M. C. 68), it was decided that "things attached to the freehold as to become part of it," and "things which, though capable of being removed, are yet so far attached as that it is intended they shall remain permanently connected with the realty, and premises used with it, and remain permanent appendages to it, as essential to its working," are rateable.

In the case of *The Queen v. The Phoenix Gas-light and Coke Company* (L. R., vol. i., p. 243), it was decided that the retorts, purifiers, gas-holders, steam-engines, and boilers are parts of the works which are absolutely necessary to the manufacture of gas, which is the purpose of the company's undertaking; that it was intended, when those things were erected, that they should remain permanently connected with the premises, and that they should remain permanent appendages to it, as essential to its working; and, if not forming part of the freehold, they are still so far connected with it as to be intended to be permanently attached to it, and, therefore, they ought to be taken into account in determining the rateable value of the land and premises. Without the retorts, purifiers, steam-engines, and gas-holders the premises would be worthless for the purpose for which they were erected—the building would not be a gas manufactory at all. All these things are fixed, and so far annexed as to be intended to be permanent, and being really necessary for the use of the premises as gas works, they therefore form part of the rateable subject.

So in the case of a railway, although the sleepers are in no way fastened to the ground, but are laid on and packed up in ballast, and the rails are laid on and bolted to the sleepers only, nevertheless it has been held that they form as much parts of the rateable hereditament as does a house, the foundations of which only rest upon a bed of concrete (Great Western Railway v. Melksham, J.P., vol. xxiv., p. 102).

Utensils in trade and furniture are not rateable. The masters of a gas company were held, in the *Phoenix Gas-light* case, referred to, to be mere ordinary chafers, kept for the purpose of measuring the gas, and in no sense part of the gasworks. In the *North Staffordshire Railway* case, things moveable, such as office and station furniture, were held to be chattels, and not rateable. In many cases, things as a mirror fixed to a wall have been held to be fixtures, and not rateable; but a billiard-table fixed to a floor has been held to enhance the value of the house to which it was attached, and

in that way to become rateable. Power-looms in a silk-mill, portable and continually moved from place to place, but steadied by their feet being screwed to the flooring, are not rateable (Reg. v. Overseers of Halstead, J.P., 1867, p. 383). It was held that, although such fixtures are not fixed to the freehold, they are, nevertheless, not so fixed as to make them part of the freehold, so that on a demise they would pass with the premises.

"*Things inappropriate*" are those which have been severed from a benefice, and are now payable to some lay person or corporation. "Proscriptions" or "appropriations of tithes," are tithes severed from a benefice, and annexed to a spiritual corporation.

These are the only description of tithes expressly referred to in the statute of Elizabeth; but, all tithes arising within the parish are rateable, at such a sum as they would let for. But, as has been already explained under the head of land, all other mines have been held to be exempt, because coal-mines are especially made liable.

Saleable Underwoods.—The statute of Elizabeth expressly refers to saleable underwood, and specially makes them rateable. In the early cases, saleable underwoods were defined as being "wood which grows expeditiously, needs up many shoots from one stool, the root remaining perfect, from which the shoots are cut, and producing new shoots, and so yielding a succession of profits." But, in a recent case, *Lord Fitzhardinge v. Pritchett* (Law Rep., Q. B. Cases, vol. ii., p. 141), Mr. Justice Mellor has very clearly defined what woods are saleable underwoods within the meaning of the statute of Elizabeth. He says,—"The question does not depend upon whether the woods consist of what are timber trees, either by general or local custom; the nature and quality of the wood is not the test; but, wherever the woods are treated so as to raise successive crops from the same roots and stools, and, whether the crops ripen, and are out at such a time as they would let for, the wood is, in material, or, whether the woods consist of oak, ash, or elm, which are universally timber trees; or, of beech, which may be timber by custom; or, willow, the stools of which can be and are so treated as to procure a succession of saleable crops: in such cases, the woods are saleable underwoods."

ON CHIARO-SCURO IN ARCHITECTURE.

This chief cause or source of beauty and power in a building is the light and shade, as it is in a picture of that building. It is a more essential element in architecture than it is in painting and sculpture, in which arts there is more to achieve in some measure, for its partial absence or deficiency than there is in architecture, which is absolutely dependent for legitimate effect upon the compositions of forms and reliefs. With a view to light and shade, all planning has been conducted in all great buildings. All buildings celebrated for their beauty present the eye with large masses of shade brought up against and brightening the walls of the important and prominent parts illuminated, and give strength and power of effect to the whole.

Light and shade were a prime element in the Egyptian and Greek temples, more especially in the provision of the deep and solemn pronos, or front portico. Indeed, neither Egyptian nor Greek ever erected a building in which it was not a prime element of effect. It is the chief charm in the beautiful courts of the Alhambra; it is the beauty of the Italian loggia, in all which the opening and depth of recesses express in primary idea of shelter, grateful to the mind in Oriental lands, from heat, and in occidental and hyperborean climes from damp and cold. In interiors, the beauty of St. Stephen's, Walbrook, is its exhibition of plan or form within form; it is the same in St. Sophia's, at Constantinople, and in the Roman Pantheon, and in all great interiors. But breadth and depth of light and shade are embodied in all great buildings,

* To be continued.

From a paper by Mr. R. Haggins, read at the Liverpool Architectural Society.

ancient, modern, or Medieval, Oriental or occidental. We see this in Gothic minsters, in Moorish palaces, in Indian tomb, in all architecture aspiring to excellence, to excite the loftier emotions. In all such, I believe, this must ever be a prime element.

The same principles of uniformity and variety, or of variegated unity, which guide the hand of the painter in planning the figures and general form of a picture, with a view to a broad distribution of light and shade, are to guide the architect in arranging the masses of his building, so that they shall form an effective and harmonious whole. There should be in an extensive architectural composition, as in painting, groups and masses of light, half light, darks and half darks, and reflexes; and of these lights and darks one should be principal, the rest subordinate, and all generally co-operating to produce a totality and completeness in the work; and, as in painting, the principal light is generally so disposed as to give the greatest lustre to that part where the action and personages are of the greatest consequence, so in architecture the highest light will be generally in the central entrance, portion, or porch, and fall on entablature, column, archivolts—that is, on the brightest, or least and deepest masses of shade, producing the greatest breadth and brilliancy of effect; and the Byzantine and Romanesque styles seem better than the Gothic. It is only in such, I believe, you can have the utmost measure of what is properly called breadth of effect, which may be defined as abundance of one thing, in one place, or, as Ruskin says, "mass of everything—of built, of light, of darkness, of colour, not mere sum of any of these, but breadth of them; not broken light or scattered darkness, nor divided weight, but solid stone, broad sunshine, starless shade." If, in any building, the masses have a square or oblong block, with a number of small equal openings—if you are not allowed to group or deepen some of the latter, recess others, and bring out a third—you may produce a pleasing building, but you cannot produce a powerful building or such as will excite high emotions in the breast, because it will lack some of the essentials of architectural greatness.

What Reynolds says of finish in painting will apply to detail and sculptural decoration in architecture:—"The highest finishing in labour in vain unless there be at the same time preserved a breadth of light and shadow." You may have beauty of colour to alone in some measure for want of form, and I believe in fact blocks of building, which cannot, from their nature, position, and purpose, as great street rows, have much variety or relief from shade, it should be sought in opposition of colour in the masses, as in pictures painted on a light key. But that is a lower element of architecture, as it is in painting.

Where the artist is at liberty to relieve by light and shadow, variety of colour is of little consequence. But where he is necessary restricted, the colour of his work is of great value. It should, I think, be employed to assist shadow, or repair the shortcomings of chiaro-scuro. Colour in architecture, say what you will about it, as it arose in the East, so it belongs to the East and South, to brighter climes than ours, and can never be a prime element in northern architecture. It is not this as may be said distinctly that I consider the charm of beautiful form as greater than any arising from colour or rich material, and that it is, and must ever be, the chief merit of architecture.

While the greatest buildings chiefly owe their beauty to it, some could be pointed to which are their failure to want of it: St. Peter's at Rome, and the new Houses of Parliament, at Westminster, may both be cited with advantage as a warning on the head—as failing of legitimate effect, the former from the non-employment of detached columns, and the latter from division into too minute openings of windows and doors.

The superiority of St. Paul's Cathedral to

St. Peter's at Rome consists chiefly in the superior provision for light and shade in the colonnades of the western front and transepts and dome tower, which are wanting in the Roman edifice. The latter is equal to St. Paul's in beauty of outline, and superior to it in size and sculptural embellishment and magnificence, and in simplicity of design, being of one order, while St. Paul's is of two. But its designers ignored the chief source of poetic beauty and power in architecture, namely, provision for play of light and shade by the projection and reception of parts. It has not one detached column; all its columns are attached. It is without porticoes, which give it a blockish effect, which is aggravated by the colonnades of the area or *forum* courts.

This building has been the subject of strange remarks. It has been praised for what are its faults; it has been blamed for what are its beauties, as, for example, the attic order, which is one of its greatest merits, however treated or proportioned. But none, I think, have ever pointed out what is its great defect. St. Peter's Church at Rome not only cannot be void of merit, its cases, but without great qualities, coming as it does from under the mighty hand of Michael Angelo, who, of all concerned in it, had perhaps most to do with it; but it has the great defect of being without any adequate provision externally for light and shade—a defect which Wren, who must have been greatly indebted to that building, carefully avoided, for the chief merit of St. Paul's is plentiful display of light and shade in its west front.

The greatest merit of St. Paul's is the arrangement of the portico of the west front for bringing up the deepest shade to heighten the brilliant light of the columns and the half light of the flanking west towers, of which Wren has made the best possible use in his design. Yet strange to say, this chief merit of St. Paul's is seldom mentioned, and the grouping that one must to it is not acknowledged. St. Isaac's Church, at St. Petersburg, a gigantic plagiarism from St. Paul's, ignores this feature, or, at least, makes no attempt to emulate it, and falls utterly in achieving the poetic power and unity of St. Paul's. I suppose so important and costly a commission, under imperial patronage, for the most magnificent of a great empire, was never executed with so little of architectural genius as this spoiled reproduction of St. Paul's Cathedral at St. Petersburg, which is good, at least, for showing that breadth of light and shade cannot be got by merely sticking on Greek porticoes to a square block of building.

The one thing opposed to this quality in the northern Gothic—the style chosen for the Houses of Parliament—is the non-existence of the detached column on a full scale on the exterior, which I look upon as the great defect of the style, excluding from it much of the seasons beauty that charms us in the Classic. The column, wherever it occurs in the Gothic in its integrity, with cap and base, and detached, and even where, as in door and window reveals, it is not entirely detached, is among the redeeming beauties of the style. This miniature arched galleries in the thickness of the walls, originated by the Lombards, and which were not superseded by the Gothic, as Mr. Fergusson asserts they were, but continued into the Pointed style, and appearing in the Cathedral of Paris, and in many others, forms the most beautiful ornament of that or of any style. In the tower of Laon Cathedral in France, where, with detached columns, is liberally introduced, and occurs here clustered, there single, it gives a magical and romantic effect of lightness, and a poetic play of light and shade that is truly charming. Beasts are seen looking out from between those columns as from between the bars of a cage. But it nowhere occurs on the great scale as in the interior or in some cloisters, where its exceeding beauty shows what it might have done for the west fronts of cathedrals had it been there applied, and embodied in a porch or portico,—a feature which seems to have been more nearly approached in the Romanesque and Byzantine styles than in the Gothic. The Cathedral of Pisa is an attempt at the complete Greek Periptery, which was too much. It is only in this temple it would be admitted in the style, and there it would be an immense improvement; and nothing would mark a nobler step in advance by the modern Gothic school than the development of a detached columnar portico, or porch of clustered or grouped columns for the fronts of their churches.

Chiro-scuro in architecture, as in painting,

must always remain for its nature difficult to teach, or bring under the government of rules. The student should watch the finest examples under their best effects of light and shadow, and try to get at the seat of their charm; a good deal of sketching, and even of modelling, should be directed to this end.

Nothing would have a happier result upon architecture than the successful study and application of the principles of light and shade by architects, and the uniform aim on their part at breadth and depth of effect in public if not in private buildings; nothing, I say, would have a happier result upon our architecture than this. It would at once become noble and real; for only in proportion as a building has depth and reality can it have this breadth of light and shade.

This principle applies to interiors as well as to exteriors; for this we had best go to some of the great buildings of the middle ages on the Continent,—the French Gothic cathedrals,—which I consider among the master-pieces of the world in the kind or character of architectural beauty proper to Gothic, or, in fact, in any kind. There is a chaste classic simplicity in the plans of these edifices,—Paris, Amiens, Evreux, Chartres, Beauvais,—which, by the way, show more sympathy with the Greek temple plan (often exhibiting the cylindrical shaft of quite classic proportions) than the English, which are quite the antithesis of it.

In the whole of this great group of edifices the architects seem vying with each other for the production of the greatest and most beautiful interior; of which they seem to have had the truest conception,—a higher and truer than the English; for in some of these, at Rheims, Amiens, Beauvais, which latter I suppose to be one of the most glorious apartments on earth, some of the highest notes of architecture have been struck. In all those the principle of depth, or of plane behind plane, has been exhibited to perfection, and the simplest provision made for the power of light and shade by arrangement of the side aisles and disposition of the light, which in these are carried to the utmost perfection of conceivable beauty by the circular or multangular apse, which is truly wonderful. In English architects should have omitted,—a feature so necessary to combine the side perspectives and give the highest interior unity and grandeur; of which the French architects had true a conception; and which the Arabians also sought in their great mosques by circular and domed terminations. If the French architects sacrificed exterior to interior grandeur, they made the sacrifice on the right side, the enclosure of interior space in the grandest manner being the highest object of our art. But the question of lateral light is what was chiefly aimed at by the English architects, and the first effect of the colossal stained window at the altar terminating the vista, which was also favourable to external grandeur; though, with some contrivance, the same degree of the latter quality could, I believe, have been had along with the French interior arrangement.

While Salisbury is designed for length, Amiens is designed to look great by greatness of parts and greatness of treatment. If Salisbury Cathedral looks long through being in many parts or bays, so does a street by consisting of a great number of small houses; but it does not for that reason look great. Salisbury is not so great a building, though it looks longer than Amiens, the interior of which strikes at first the eye with an aspect of vastness, and a sense of a noble simplicity and majesty, arising from greatness of scale, greatness of module, and grandeur of treatment. Salisbury Cathedral might have been less adapted to give effect to scenic processions, but it would have been a greater building, finer and more meritorious architecture, had it been designed on the principle of Amiens.

I have heard the French cathedrals accused of being shapeless outside, though beautiful within; but if a building is designed for greatness of internal effect, and truthfully constructed, it cannot be shapeless outside. For the same reason that Amiens is a much finer building inside than Salisbury, it must be finer outside, for being of greater parts and nobler proportions, as I have already asserted it to be in speaking of composition.

But there is one great interior in the East where these principles are illustrated, which I must not omit to notice,—St. Sophia, at Constantinople,—which is in every respect one of the most noble and beautiful apartments on earth,—satisfactory in every respect. Most other

great buildings—Egyptian or Greek temples, or Medival cathedrals—were more or less a series of great arcades, but this is one great apartment, with every concomitant of greatness and beauty. It is better proportioned than that of St. Peter's, at Rome, and than the centre compartment of St. Paul's, at London, or of any Gothic cathedral; while it has as much unity, but infinitely more variety and picturesqueness than the Pantheon at Rome. Such an assemblage of grand and beautiful architectural features—domes, semi-domes, colonnades, arcades—harmoniously combined in one great interior, appears nowhere else. It is the most beautiful covered area on earth, and had it been united to a worthy exterior—an exterior in keeping with it, and expressive of it—the whole would have been the greatest building in the world, the acme of architectural perfection. But it is marred unfortunately—as is St. Stephen's, Walbrook—a Venna to a Valcan—to an exterior monstrosity.

This quality of breadth inheres to a great extent also in the architecture of Sicily, which, like the climate that bleeds the Oriental palm and aloes with the orange tree, the fig, the olive, and the vine, union and blends the architecture of the East and West in the most artistic and beautiful manner. But in no buildings is it better illustrated than in many of the domestic buildings of the Middle Ages, with their openwork fronts or arched loggias, so favourable to true architectural beauty, and reminding us of the Chester rows. Among these I would particularise the Venetian Gothic palaces. I am not referring particularly to the ducal palace, in which building I for often can see nothing of the surpassing beauty that some can see, or affect to see, in it,—but to the Ca d'Oro, Foscari, and one or two others. In these I see exceeding grace and beauty. The Ca d'Oro Palace carries to the extreme of grace and delicacy the openwork principle which charms us in many more of the buildings of the Middle Ages, and in some of the Hôtels de Ville are exemplified among which the facade of the Hôtel de Ville at Arras deserves special mention.

Composition and light and shade are the most important parts of architectural design. Many of the greatest buildings of the world are, like the oratory of Demosthenes, undressed; and the rest owe their impressiveness, not to their sculptural decoration, but to their great proportions and beautiful and harmonious forms—their graceful contours and provision for breadth of light and shade.

It is in this lies the power of architecture, and not in its sculptural ornament, or hair, like Sampson's strength. Sculptural decoration belongs to the department of the painter, and goes to dilution in poetry and colour in painting, and cannot therefore be anything but a minor element of art, which seems to have been the impression of the greatest minds that have written on architecture—Goethe, Schlegel, Lamartine; the latter speaks of St. Peter's "swelling out in the proportions of a god," and designates it an epitaph in stone—a monumental transfiguration of the religion of Christ. "Pull down the pictures," he adds, "carry off the statues—it is still the house of God."

In a general survey and contemplation of great edifices and styles of architecture, my strongest impulse is always to speculate on or scheme out what I conceive to be the widest possibilities of architecture—grandeur and expression, and what the future course of architecture is likely to be in England and among European nations generally. Michelangelo's conception of architectural greatness was the enthronement of the Pantheon, which itself combined the two most graceful of classic features, the colonnade and dome on the Temple of Peace; and it was a poetry legitimate combination.

The qualities of certain buildings combined in one would make the ideal of architecture; and the subtlest and most perfect building would be one combining the chaste columnar beauty and elegance of detail and decoration—all that so captivates us in the Greek architecture, with as much as possible of the soaring composition of the Middle Ages. My own conception of the grandest possible style of architecture, or of that turn or modification of the classic style, applicable to great monumental works, is a combination of trabeation and arcuation, or a blending of the vertical and horizontal principles.

Thus such a pure classic style, by which I mean not a *pure* Italian, but a pure Greek or Græco-Roman style, I can imagine no style of

architecture more suited to enshrine the pure simple worship of Christianity. No architecture to me, or stands so well in my mind, as a type of moral truth and purity, as these pure forms of an architecture in which purity and beauty of form give the charm and merit independently of ornament. The beautiful volutes of the Ionic capital of the Erechtheum is to me a striking image of obasity or purity of soul. Freely treated—that is, combined with arch and dome, not Roman—the style would produce a more truly solemn and sublime, and, at the same time, perfectly adapted interior, than pure Greek architecture: and in a paper published in the *Builder*, now nearly twenty years ago, I expressed these views. They were opposed to the prevailing notions of the time, as they are to the present ones, and I know no one who holds exactly similar opinions to myself on this point; but it is some consolation and support to find the French architects animated but by an spirit in working out a style, though not applying it at present to ecclesiastical purposes, from the self-same elements.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

ACCORDING to the report of the council which is to be read at the annual meeting, May 2nd, the total number of members, of all classes, is now 517. The receipts, in consequence of many liberal contributions to the library fund, have been exceptionally large, and the president, Sir William Tite, M.P., with a munificence which has always marked his connexion with the Institute, has recently contributed 100l. to the "Travelling Fund." This sum, together with accumulated interest on the fund since 1866, amounting in all to 1271l., will now be invested in guaranteed Indian Railway Stock. The subject of the Voluntary Architectural Examination has received renewed attention. The rules of the examination have undergone a revision, which, while it has modified them in certain details, has left unaltered the general principles of the scheme, as drawn up in 1866. The council, however, consider that the labours of the examiners and moderators ought not to be unremunerated, and they have therefore recommended that fees should be paid in future to all the gentlemen who may consent to undertake these arduous and responsible duties.

In accordance with the resolutions passed at the closing general meeting of last session, a list of books recommended to the architectural student has been drawn up by Professor Lewis and A. Waterhouse, Fellows, and has been appended to the rules lately re-issued. A form of certificate has also been prepared, and will be granted to those candidates who may pass, or have already passed, in the respective classes of proficiency and distinction. A preliminary examination has also been devised for such students as have been at least one year in an architect's office.

The labours of the Professional Practice Committee have of late been chiefly directed towards the consideration of a request made by the London Builders' Society, that the Institute would aid that society in drafting certain conditions of contract, which it was proposed should be annexed to specifications and accepted in professional practice. This request has led to several meetings of the committee, and interviews with the London Builders' Society. The details resulting from the discussions on this subject have, however, been so numerous and diverse in their bearings, and have evoked such varied interests and responsibilities, that the Professional Practice Committee consider it expedient to limit their endeavours to a mere definition of those specific heads under which the conditions of a contract might advantageously be framed. As soon as a conclusion has been arrived at on this point, it will be made known.

The attention of the Council having been drawn last Session to the Fine Arts Copyright Consolidation and Amendment Bill, then before the House of Lords, a petition on the subject, praying that the copyright contemplated in the Bill might extend to architectural designs, was drawn up by the council, and presented to their lordships by the Earl Stanhope, in June last.

The past season has witnessed a steady accession to the Library and Collection. Since May, 1869, ninety-one volumes have been presented, besides forty pamphlets, and transactions of societies, exclusive of the regular donations of English and foreign periodicals. The money

donations of 1869 amounted to 1061. 12s. Twenty volumes, including "Dugdale's Monasticon," Coste's "Monuments du Kalve," and other useful works have been purchased.

It will be remembered that last year the president contributed a liberal sum to the library fund, for the purchase of a series of drawings illustrative of ancient ecclesiastical decorative painting. The council have now the pleasure of stating that several of these drawings have been completed by Mr. George Wardle, the artist entrusted with this commission.

Adverting to the general prospects of architecture, and the condition of public works in England, the council notice with satisfaction the progress of many important structures recently erected in London, but view it as a matter of regret that, at a time of severe distress among the building operations, the Government have not proceeded with certain works recognized as requisite for public service, and the execution of which is called for by the public voice. The delay thus occasioned must necessarily have a baneful effect in other directions, and especially on the encouragement of architecture by corporate bodies and private patrons, who are indubitably, but less surely, influenced by the example of the State.

The report concludes thus:—

"It is sincerely to be trusted that whatever principles of public economy may be advocated by her Majesty's Government, they may not degenerate into parsimony towards the arts. We desire a hearty sanction (not the future), and that whatever course may be adopted under the present system, those who are in authority will not forget that to encourage the arts of architecture is not only to administer to its intellectual enjoyment, and to develop its taste, but also to foster its science, its industry, and commercial welfare."

A list of the subjects for which medals and prizes are offered is published, and may be obtained at the rooms of the Institute.

BRIGHTON AND ITS FUTURE.

THE *Brighton Times*, good-humouredly commenting upon our recent remarks in this direction, says—

"We have relied too much, the *Builder* tells us, upon the favour and countenance of the fashionable world—an unstable foundation to build upon. We want more local trade and manufacture, to give us solidity. We want more back-yard accommodation and drainage—more stenation from the local authorities to sanitary matters—more laws to transform themselves into ministering angels to the poor. We want more uniformity of style, and less pretentiousness of plaster, in our buildings—more opening for the centre of the town, by a few wide leading thoroughfares. We want old streets to be widened, and new streets to be not made narrow. Lastly, we want a 'little more shipping interest,' by means of a port or harbour, to be constructed at, or near Brighton. To this last consideration, by the bye, it has often been objected that fashion and gentility would never stand a rough internixture with sailors and shipping-masters; and that, to make a port here, would be to scare away all that is elegant, and refined, and well-paying, from amongst us; but, be that as it may, we happen to know of a speculative gentleman—and it will perpetually be the *Builder* to be informed of this—who is actively contemplating in his mind's eye such a harbour, and hoping to materialize the vision into a reality."

LECTURES ON MUSIC.

In pursuance of the scheme of instruction in science and art for women, which has for some months been working well at the South Kensington Museum, under the direction of a committee of ladies, assisted by the Hon. and Rev. Francis Eyre, Mr. Arthur Sullivan commenced on Tuesday last, in the Lecture Theatre of the Museum, a course of twelve lectures on the Theory and Practice of Vocal Music, to be continued on successive Tuesdays and Fridays.

As preface, he stated the main object he had in view, namely, not to transform his auditors into Nilsson and Trebelli; but, by elucidating many of the difficulties of the science of music, to make them more appreciative and intelligent critics and listeners, both of the compositions and execution of others; the intelligent auditor doing as much to raise the standard of criticism and assist the progress of art as the inferior performer, often heard, lower and retard them.

Though the taste for music has increased so

visibly among all classes, as may be seen by the innumerable concerts given at the present day,—150 to 1, fifty years ago,—yet the actual study of music as a science is more neglected. A fine voice is more appreciated than good singing. The average standard of instrumental performances is extremely high, and one aiming at becoming a virtuoso has greater difficulties to overcome than formerly. In connection with the study of harmony, he quoted from a work of Mr. Thomas Horley, a madrigal writer of the fifteenth century, a dialogue between a distinguished diplomatist and a friend, the former finding himself so disconcerted at his inability to take part in a vocal production at a reunion of the members of the cabinet, that he determined forthwith to study harmony. The lecturer drew an amusing analogy between this anecdote and a similar revision of cabinet ministers of the present day. He deprecated the style of modern sacred music, instead of the grand old unimpassioned chants that left more expression to the sacred words than the jingling tunes in modern use, and paid a tribute to the monks of old as the fathers of harmony.

A choice selection of part songs has been made, to illustrate the next lectures, to be performed by the ladies attending them; and we feel convinced that much will be gained from the instruction of the able composer of the almost Handelian production, "The Prigdal Song."

THE ICONOGRAPHY OF WELLS CATHEDRAL.*

THIS is a subject replete with difficulty, although there is abundant matter on which to dilate. The task has been attempted by one of the great authorities of our age, now passed away, and he has set forth a most elaborate plan and detailed description of this work of art, and has attempted not only to describe the west front of Wells generally, and to set forth its leading characters, but he has attempted to assign to each tier of statuary its particular object, and to each statue its own particular character and name. This certainly was a grand attempt, and well worthy the great mind and the talent and taste of a highly gifted man; but on careful examination of his description, and reference to his authorities, we are compelled to admit that too much is the result of open conjecture, and that he has exposed himself to the just criticism that has been passed upon his work by very competent authority. The elegant and highly-interesting and instructive work of Professor Cockerell, "On the Iconography of the West Front of Wells Cathedral," has been very learnedly and ably criticised by Mr. Plancoche, in the Journal of the British Archaeological Association, for March, 1867. This appeared six years after the publication of Mr. Cockerell's work in 1851. The attention of the Somerset Archaeological and Natural History Society was called to this subject at their meeting in Wells, in 1850, by our much-revered friend, Dr. Markland, who then read a paper on the subject, the notes of which had been furnished him by Professor Cockerell, and are given in the volume of the Proceedings of the Society published in 1851. The Professor's explanation of the sculpture is there given in brief, and some particulars are added by Dr. Markland. When the Archaeological Institute visited Bristol in 1851 (July), one of the places visited was Wells, on which occasion Professor Cockerell gave an admirable discourse upon the sculptures, and those who had the privilege of attending it were well rewarded by the impressions made, and the flood of light that seemed to be poured upon the history there set forth in stone (see Journal of Archaeological Institute, vol. viii, p. 327). If many of the explanations were doubtful, or seemed to be far-fetched and fanciful, yet the whole discourse conveyed such a noble idea of the end and design of the pinn, and grandeur of the subject, that a new and ardent interest was awakened in us, now beginning to bear its fruit. I shall ever look back to that day as one of the most interesting and profitable I have ever spent.

The history and architecture of Wells Cathedral have so lately been given in a series of lectures by Mr. Freeman, which have been published in the *Bath Chronicle*, and are now being reprinted separately, and these we fully and ably detail all that pertains to its erection and historic interest, that my own observations may be

* From a paper by the Rev. Prebendary Beatch, read at the meeting of the Bath Philosophical Association.

strictly confined to the ornamentation of its west front and such statuary as is carried round the north-western angle. This is supposed to be the work of Bishop Jocelyn, called also Jocelyn Trotman, not only Bishop of Bath and Wells, but said to have been also a native of Wells and partly educated there. He died in the year 1240, but his work was dedicated A.D. 1230, so that it was finished previously to that period, and is a noble monument of the work of the thirteenth century, i.e., the earlier portion of the century. The episcopate of Jocelyn lasted thirty-one years after the settlement of the Glastonbury controversy, and over forty-two from his first consecration. The west front of Wells is in the same style of architecture as Ely, Lincoln, Salisbury, &c., Early English or First Pointed. The west front of Wells consists of a central portion (or nave with side aisle) and two side towers incorporated into the front. This arrangement gives great space for the display of the statuary, and the doors and windows are small and almost insignificant. This is totally different from the arrangement of some of the west fronts which are most distinguished for the grandeur of their design. Amiens, where the portals are of huge dimensions, very deep, and filled with the statuary, which at Wells is distributed over the whole surface. The width of the west front of Wells is 147 ft., while that of Amiens is only 116 ft. This length of surface is broken by six buttresses, which are enriched with statuary in the front face and at the sides. The statuary is divided into nine tiers, and these again into two divisions, north and south of the principal entrance, the north (or left hand) being the temporal side, the south (or right hand) the spiritual, according to Professor Cockerell's arrangement.

If we begin with the first or lowest tier, we shall find it, to the front face, almost entirely defaced by statuary. We can therefore only remember these conventional figures of the six niches (all but two vacant) which bear evidence of the work of the Iconoclasts of the sixteenth and seventeenth centuries, and of the Somersetshire riots in 1685, when, as Professor Cockerell observes, "the archives of the cathedral were miserably burnt." The loss of these probably prevents us ever recovering a record of what these figures represented, and the six statues and figures do not present sufficiently characteristic features to enable the antiquary to state confidently what the series may have been. The practice in the French cathedrals and elsewhere was to place the most sacred characters to the south. On the north and east face of the north tower the figures of this tier remain. They are the most female. The male figures are episcopally habited, but I will not venture to assign a name or attribute to any.

When the west front of Wells was executed, learning, both human and divine, art and science, were in the hands of the few. The multitude of the people had to be guided by outward expressions, or by traditional and oral teaching. Painting and sculpture were used as books are now, and we learn from the Venerable Bede that in his day it was accounted a great acquisition when these could be exhibited in churches as a means of instruction. Sermons were preached to the people not only inside the churches, but outside, when the state of the weather permitted, and to have a series of illustrations at hand was no mean help to the preacher of that day. The subjects of the Old and New Testament, arranged by way of type and anti-type, are still to be found both in painting and sculpture in our churches, and we have a striking instance of this at Wells.

But in the west front of Wells, not only have we a series of sculptured subjects from the Old and New Testament, but the mind is carried upward and upward, through the estates and degrees, the ranks and conditions of this world, to the dread day of judgment and its appealing realities; and we see, as it were, all ranks and degrees brought before the supreme tribunal! Here was a theme for devout contemplation before entering the portals of the church, or before engaging in its solemn services. These sculptures were not intended to be looked upon as mere matters of art or of idle curiosity, but to intend to suggest very solemn thoughts, and inspire such meditations as might make the mind more fitted for devotion inside the church. What may now appear to us rude and grotesque, produced no such feelings in the men of that day. They saw their own dresses, arms, habits, and other characteristics strikingly delineated.

The king on his royal throne, the counsellor and senator in his robes of office, the lady in her flowing mantle, the supreme pontiff, or the bishop with crozier and mitre, the abbot, the priest, and monk, each in his peculiar habitations, were at once known and recognised as realities of the time! To us they have become rather a matter of antiquarian interest than of actual life. They have lost their intended lesson, but become instructive in another manner. If we do not contemplate them with religious interest, we can contemplate them as full of the history of a bygone age, and this is rather the aspect in which we should regard them this evening. They are striking examples of the costume of that period (I mean the 4th and 5th tiers). On the north, or royal side, on the west front (divided into two parts by the principal entrance), are 42 statues in which the number of ecclesiastics predominates. We have also female figures, habited as nuns or as ladies of rank. On the north or temporal side we have a like number, but here the king and crowned figures predominate, and intermixed are the figures of queens or royal ladies; on the south, or Mr. Cockerell's plan holds a book in her hand; and with these we have also figures of bishops and priests. A similar intermingling of characters is carried round the north and east side of the N.W. tower, where we have females as well as royal and ecclesiastical figures. The number of statues on the north side of the west front, and on the north side round the corner towards the Vicar's Close, amounts to 68, and may be taken as very interesting illustrations of the military, civil, royal, and ecclesiastical costume of the twelfth and early part of the thirteenth centuries. Eighteen are crowned kings, eight are crowned queens, seven armed knights, fifteen are male figures without crowns or robes or priors, and nine are females, five mitred ecclesiastics, three without mitres; some are defaced.

"The female royal costume [says Mr. Planché] is represented with as much variety as it is capable of. On the north side of the second buttress stands a Queen, holding a book of prayer in her right hand, and a sceptre in her left. She is seated, and her feet are on a raised platform, forming a sort of throne. She wears a long flowing mantle, and a crown. Her head and neck are enveloped in the veil and simple, worn sometimes of silk, and sometimes of gold. Her hair is secured by its retention a distinctive portion of the conventional habit."

I instance this statue as an excellent example of the dress of the lady of rank of that period. Of the seven armed knights, which are exceedingly illustrative (says Mr. Planché) of the armorial bearings of the twelfth century, three are in the west front, and four in the north-west tower. Five are in complete mail, with the surcoat without sleeves, and bear the long Norman shield, unsculptured with armorial bearings. It would be very desirable to ascertain, if possible, whether any device was ever painted on these shields. That many if not all the statues were painted is very probable, as patches of blue, vermillion, and gold, are still stated to be discovered in the niches, and of all portions the shield was most likely to be so ornamented. Nothing could assist so materially to fix the actual date of their execution, as well as to arrive at some fair knowledge of whom they were intended to represent, as the discovery of such ornamentation. If they were executed under the direction of Bishop Trotman, heraldry had at that period become a science. It is possible the date at which rolls of arms first appear, and if these warriors were meant to represent historical personages they would most probably have displayed their armorial bearings on their shields, and perhaps their surcoats. In corroboration of this Mr. Planché instances the armorial bearings of the Longsword-Bird of Salisbury, in Salisbury Cathedral, which is of this period, and where the lions are sculptured on his shield and painted on his surcoat.

As the restoration of the canopies and niches of the west front is now begun under such excellent auspices, we cannot doubt that every pains will be taken to examine most minutely the details of each figure and every trace of ornamenting which may be left; and if, indeed, the series of figures could be found to be really historical, it would form one of the most, if not the most, valuable of historical records which we possess,—such a record, indeed, as any country may be proud of. At present it is only the intention to restore the canopies, niches, and columns which support the canopies, and the pedestals on which the figures stand, and to

support the figure itself, where needed; but it may be hoped that where the figure itself is damaged, and where the design can be recovered, or the portion be exactly reproduced, the figure or the part may be restored. I speak now my own opinion; I do not wish to advocate any attempt to restore the whole, or to remove any portion that will stand; but I believe it will be found that many statues are now so far decayed, that unless they are strengthened, or the figures reproduced, they must soon perish, and some of the most interesting works of the thirteenth century be for ever lost. I do not think that the identical reproduction of a figure, while it may be truthfully restored, is its destruction. How few of our oldest monuments could have existed had they not been reproduced! About the year 1850 one of the statues fell; it was the one supposed by Professor Cockerell to represent Edward the Elder; in its fall it was dashed to pieces, and therefore its exact reproduction rendered next to impossible, and this may be the fate of others which may now be saved. Our very worthy and much lamented citizen, Dr. Markland, restored and replaced this figure. It had been drawn by Carter, and happily Professor Cockerell had also previously made a drawing of it; but in Carter's time the figure had already lost both arms. The work of reproduction was effected by Mr. Richardson, the sculptor, and as Mr. Planché, in his comment on these figures, pronounces no word of condemnation, I think we must admit that it is satisfactory, as any defect of costume or inaccuracy of representation would have been certainly noticed by him. Another figure was replaced about twenty years ago by Archdeacon Brymer. In writing to Dr. Markland on the subject of the sculptures, and noticing the fall of that supposed to be Edward the Elder, Professor Cockerell observes—"I grieve to hear of the fate of Edward the Elder, which is indeed a national loss, as the Episcopate of Glastonbury of Wells. I earnestly hope the fragments are preserved, and have not suffered much. It would be scandalous to leave it unrestored." Surely the heart of the Professor, as well as that of Dr. Markland, would have been gladdened had they foreseen the steps now taken to prevent any further decay. I find a note in the proceedings of the Somerset Archaeological Society, vol. 1851, which says, "It is earnestly hoped that the Dean and Chapter and the gentlemen of the county will come forward, and that a special subscription may be entered into for their preservation." This hope is now realised after a lapse of nearly twenty years. A strenuous effort has been made to carry out this object, and the best architectural assistance has been obtained in the person of Mr. Gilbert Scott and Mr. Ferrey, the former of whom has issued his report and suggestions. The cost of the restoration of the west front will be from 6,000l. to 8,000l., and happily the money already subscribed amounts to the former sum; so that we may trust, when all have come forward, an ample sum will have been raised to do the work in the best possible way.

In treating of the sculptures of Wells Cathedral something ought to be said of the state of art at the period of its probable execution. If the west front is the work of Bishop Jocelyn, it is of the age of Henry III., who displayed a taste for architecture, sculpture, and painting, and rebuilt and restored the royal residences and took special care of their decoration.

"In the thirteenth century the progress and enterprise which exhibited in the arts, was equally developed in sculpture, and it was then historical and religious sculpture in great profusion attempted to rival works of classical antiquity."

The literature and poetic faculty, which in the twelfth century had been fostered by Henry Beaufort and his accomplished and virtuous queen, now infused itself into the arts of painting and sculpture, and the knowledge of the Scriptures imparted a dignity and authority to the works of those days which entitles them to our highest veneration and study. (see *Annals*, W. F. of Wells, app. pp. 6, 7). At that period in this country art attained a merit which has never been fully appreciated. The literary and poetic faculty, which Edward I. to the memory of his Queen Eleanor appear to have been excited mostly by English artists (see *Annals*, vol. 30).

We have, therefore, a noble example of the decorative taste of this period. If the west front of Wells cannot be quoted as a fine example of architectural design, it is unparalleled as a monument of sculptural skill. When contrasted with the west front of Amiens, we see at once its architectural shortcomings. We have no grand portals, of themselves the recipients of a series of sculptures, and capable of accommodating a considerable body of people, could therein be taught the elementary truths of religion before

entering the church itself; but we have a much more perfect and complete display at Wells of the great verities of religion. The sculptures at Wells are not incumbered by apocryphal legends; but, where they treat of Scripture, represent Scriptural verities.

The sculptures at Wells are supposed to be the work of native English artists, or artists trained in this land. This fact will probably be more clearly brought out while the west front is in process of restoration; at all events, ample opportunity will be given for mastering the details of every figure, and, if needful, reproducing it. It may not be known to some here that a great work is being done at Canterbury. I have not been able lately to visit that most interesting cathedral, but a friend has sent me particulars of what is being done there. Many of the vacant niches have been filled with figures, where these had never before been placed, or, if placed, been destroyed. The south face of the porch and the eastern side of it have already been supplied with historical figures, and it is intended to carry on this work till the original design is perfected. Now, to accomplish such a work, the study of the Wells figures is invaluable. A list has been published of all those persons who have generously undertaken to supply figures, which are to be executed by Mr. Fryers, at a cost of 24*l.* each.

We believe that the day is past when any superstitious feeling could be attributed to restoring a work of this sort, or that it could lead any one away from the fountain of holy truth, or fix the mind in adoration of the work itself. Where a people have an long been accustomed to be taught from the written Word of God, and can now read that Word for themselves, and are taught to contemplate art for its own sake, or as a means of expressing evangelical and devout feeling, or conveying historical ideas, there is little cause to dread a return to superstition or idolatry. There is, indeed, a very different lore to be gathered from a right contemplation of these works of what are sometimes called the "dark ages;"—dark, it may be, in some points, but certainly not in transforming into holy uses that which had been so readily misused in heathen times. A very slight acquaintance with classic art shows us that the sculptor's chisel in the best days of ancient Greece and Rome was employed to delineate subjects either warlike, or voluptuous, or licentious; but when the chisel was transferred into Christian hands; when it was thought wise and good and devout to employ art no longer as a stimulant to passion or to licentiousness, but as a means to purify and exalt and spiritualise the feelings; then came forth the noble figures of the great and the good, the wise and the learned, holy men and holy women, and the embodiment of great religious ideas, instead of war, licence, and sensuality. The subjects of Christian sculpture are all great and ennobling and refining, instead of corrupting and enervating, and nothing, as it appears to me, shows the power and influence which Christianity exerted over society, more than the change which it wrought in art. In early and in Mediæval times it became a means of inculcating great religious ideas, instead of unholy passions. If this, art's glorious mission under the Christian dispensation, was for a time perverted and abused,—if the great power which sacred art had acquired over men's minds became perverted to superstition,—it has surely been chastised, and been chastened and cleansed of its errors and corruptions, and may, under good guidance, still be applied to great, and to useful, and to holy purposes. It was the opinion of our early reformers—Cranmer, Ridley, Rodman, and other learned men (see "Necessary Doctrine and Erudition for every Christian Man," published by the authority of Henry VIII.),—that pictures and statues might be placed in churches, and ought not to be despised, but need reverently; and the injunctions of Queen Elizabeth and Edward VI. are directed against "monuments of feigned miracles." For the opinions of our leading divines and laymen on this subject, see Dr. Wilson's "Ornaments of Churches Considered."

CARVED STALLS IN GERMAN CHURCHES.

We add to our examples of chancel stalls from German churches a view of those in the Church of St. Catullus, in Moorburg. These belong to the end of the fourteenth century.

* See p. 45, ante, &c.



STALLS IN THE CHURCH OF ST. CATULLUS, MOORBURG.



CARLISLE MEMORIAL COLUMN, CASTLE HOWARD.—MR. F. P. COCKERELL, ARCHITECT.

THE CARLISLE MEMORIAL COLUMN, CASTLE HOWARD.

THE column of which an illustration is given has been erected by public subscription as a memorial of the late Earl of Carlisle, who, through a long life one of the most conspicuous and useful men in his country, is best known to the general public as Viscount of Ireland, which high post he occupied for eight years. The committee appointed to carry out the memorial invited privately designs from four architects, and that of Mr. F. P. Cockwell was selected.

The column is erected upon Bulmer-hill, at the edge of the Castle Howard estate, about two miles and a half from the Castle, and facing the magnificent avenue which traverses the park, and about twelve miles from York. The hill, forming nearly the level descent from the wolds to the plain of York, commands a magnificent view of the country surrounding the city.

The total height of the monument, from the foot of the steps to the top of the gilt urn, is 110 ft.; and the diameter of the column, 7 ft. 4 in. The shaft of the column, though hollow, is within a staircase, to the height of the monument would add little to the extensive view enjoyed from the already elevated position. Access for repairs is provided by means of a wire rope inside. The four pedestals at the corners of the platform are surmounted by knightly helmets, and carry each on one face a sword and a shield, bearing alternately the arms of the Howard family, and the Royal coat of arms, in allusion to the viceregal dignity of the late Earl.

The materials used are, for the foundations and the face of the platform and the sub-pedestal of the column, Castle Howard stone of a reddish brown tint; the rest of the work being executed in Whitby white stone. The tripod is executed in terra cotta, cored and braced with wrought iron. The urn and flames are of copper, gilt. The work has been carried out by Mr. Bailey, of York. The carving and modelling of the tripod are by Mr. Kelsey, of London. The whole was superintended by Mr. Chick, resident agent to a neighbouring estate. The total cost of the works was 2,061l.

ST. MARY REDCLIFF CHURCH AND THE FREEMASONS.

THE Freemasons of Bristol having previously rendered the external stonework of the Lady Chapel, Redcliff Church, and more recently contributed funds for handsomely paring the chapel, and for decorating the vaulted ceiling. At the anniversary meeting of the Canynge Society, on the 21st inst., they mustered in force, and the Earl of Limerick, P.G.M., accompanied by Bro. W. A. T. Powell, D.F.G.M., and members of the Grand Lodge and of the other lodges of the province of Bristol, proceeded to the Lady Chapel, where they were met by the Rev. Canon Randall, the Lord Bishop of Gloucester and Bristol, the churchwardens, and other officials of the parish of St. Mary Redcliff. Bro. J. R. Bramble, Prov. G. Registrar, read an address setting forth the part taken by the Freemasons of the province of Bristol in the restoration of the Lady Chapel and other parts of the sacred edifice, and concluding with the aspiration that it might shortly become perfect in all its parts, and the efforts for its restoration be crowned with complete success. The vicer made a suitable reply, and the Bishop of the diocese having thanked the members of the craft for the good work they had so materially aided, the company adjourned to a luncheon at the Royal Hotel, at which Mr. W. A. T. Powell presided generally.

Mr. C. S. Clarke, in the course of his report as hon. sec. of the society, read the following note from the architect, which serves to show what has been done during the past twelve months:—

"Bromley, April 26, 1870."

My dear Sir,—I have received your request (as the part of the Redcliff Restoration Committee, that I should send you a memorandum of the progress of the works since the last meeting of the Canynge Society, and I hasten to comply with it. Pressure of occupations, however, forces me to be brief. The chief efforts have been directed to the restoration of the tower, and considerable progress has been made. The four turrets at the top—besides the tower, having become dangerous, had been removed, and have been completely reproduced. Considerable advance too, has been made towards the completion of the uppermost story of the tower. It is proposed that the clock shall be dismantled for night, and the clock-face, arranged with that end in view, is now being proceeded with. The pantheons and sub-arches will doubtless be glad to hear that the works required in the chancel, so long neglected, have been taken in hand. The north and south screens have been restored, and the eastern termination, with reed-

is commenced. A fitting pavement for the chancel, and the lighting of the church generally, are works that should be immediately attended to when funds are available.

In the Lady Chapel a tile pavement, with marble steps, has been laid down at the cost of the Freemasons of Bristol, when the external stonework of the chapel had been previously restored. The same body, not unmindful of the connection of the craft with the building, have also proceeded to improve the interior of the chapel, the decoration in colour and gilding of the grained vaulting of the chapel, which will, it is hoped, be completed by the day fixed for the meeting.

Several additional stained glass windows have been set up with great advantage to the general effect of the interior, and in the process the work of the craft, especially one intended to fill the large window of the north transept as a memorial of Edward Colston, a name

I desire to mention, in conclusion, the continued devotion of Mr. William Rice to the work in hand, and to subscribe myself, dear Mr. Charles Works,

Your very faithful servant,
GEOFFREY GOWIN."

Mr. Sholto Hare and others took part in the proceedings. The sermon, which was preached by the Rev. R. J. Simpson, produced about 100l. The decision of the vesting was the work of Messrs. Clayton & Bell; the pavement was executed by Messrs. Simpson & Co.; the corona was provided by Messrs. Hart & Co. Four of the windows are filled with stained glass (three by Wallis and one by O'Connor); one yet remains to be filled, and the panelled walls require to be treated with colour.

PHYSICAL COMMOTIONS.

ATTENTION having been turned, in rather a startling manner, to this subject by the tremendous manifestations within the last two or three years, every new indication is apt to be rather too carefully recorded, though, under ordinary circumstances, many might have transpired without particular notice. Making every allowance, however, for this, it does seem as if such commotions were much more frequent than usual; and we therefore present a new batch of them, collected within the last few weeks.

A letter from Trieste says that three shocks of earthquakes have been lately felt there. The town has suffered no damage, but some places in Dalmatia have suffered severely. At Olana, in the district of Volosia, 150 houses have been damaged and 37 destroyed. The population had to pass the night in the open air, exposed to a severe frost, for during the night fifteen shocks of earthquakes occurred. At one moment the village was in danger of being destroyed by two immense masses of rock, which rolled down from a neighbouring mountain.

Two distinct shocks of earthquake were felt in Kingston, Jamaica, on the morning of the 22nd of February, about seventy minutes or half an hour after midnight. They were unaccompanied with any of the phenomena usually attending such visitations. The motion seemed to be rather of a rotatory than an undulatory nature. The first shock was of very short duration,—about three or four seconds. Then, after a pause of about a couple of seconds, the second and more distinct one was felt, lasting about from ten to fifteen seconds. The entire heavens were overcast with dense black clouds. These earthquakes are becoming more frequent than welcome of late, according to the *Jamaica Morning Journal*.

The *North British Mail* states that a pretty severe shock of earthquake was recently felt at Aberdeen, on the night of the 17th inst. The noise was like the rumble of distant thunder, and was heard by numerous people beyond Cairn. Slight shocks have of late years been pretty frequent, and they generally occur in peculiar states of the atmosphere.

The French Academicians have evidently an eye upon the commotions. At a recent meeting of the Academy, reported in *Science et Opinion*, amongst the correspondence of the day presented by M. Dumas was a paper relative to the earthquake which occurred at Ancona on the 8th of February.

Another communication was from the Peruvian Consul, stating that on the 7th of last December, at 7 a.m. and at 7 p.m., shocks of earthquake were felt in Peru, and were again repeated on the 10th.

M. Bousignault remarked, on this subject, that the volcano of "Copayán" after a long period of the most complete repose, had again become active. M. Bousignault was disposed to think that there is a relation of cause to effect in these two phenomena.

A curious phenomenon was witnessed last month at Malta. The sea suddenly rose two or

three feet above its usual level, receded, and then rose in a similar manner a second time. This may have been occasioned by some submarine volcanic eruption in the vicinity.

New York was visited on a recent Sunday by an equinoctial storm of unusual severity. It is believed that many shipwrecks have been caused along the coast.

A Tripoli (Barbary) letter, in the *Levant Herald*, reports the fall of a monster aérostat in the neighbourhood of Moutourak, weighing, it is said, 1,800 okeas, nearly 5,000 lb. This must, of course, be only a rough guess; but if it be even tolerably approximate, the mass is one of the largest meteoric bodies on record. Be its actual size what it may, the Minister of Public Instruction has ordered the fragment to be sent to the capital, where it will probably be placed in Mr. Gould's Museum.

The enormous size of recent sea spots—16,000,000 square miles—is naturally reviving speculations as to the nature of such phenomena.

A strange statement has appeared in more than one paper to the effect that astronomers are perplexed and astonished by a new and, it is supposed, magnetic storm from the sun, which is said to have reached nearly half way to the earth's orbit; but there is a very doubtful look about the statement.

Since all the above was prepared, about a fortnight ago, the following new collection of incidents has been made.

The New York papers of the 3rd publish the following:—San Francisco, Jan. 2. At 11:50 a.m. to-day, a sharp, wicked shock of earthquake occurred here. Its duration was six seconds; the direction from south-east to north-west, and the motion vertical. There was no damage to life, limb, or property; but there was intense excitement. The streets swarmed with people in a moment. It was raining at the time. Prior to the shock the barometer was seen to fall very rapidly."

A Panama despatch says, much damage has been done in the vicinity of Quito, in the province of Imbabura, and in many other places, by earthquakes. On one occasion continued shocks were felt from noon till morning of the next day, when a shock of extraordinary violence occurred.

"The inhabitants," says the *Panama Mail*, "were terrified, and rushed from their dwellings, fell on their knees, and implored for mercy. During the latter part of the day thirteen distinct shocks were felt. The first was accompanied by a violent wind-storm. Several times since many shocks have taken place, but none revealed great alarm until March 24, when one of unusual severity struck about mid-day; but the most terrifying one of all took place on the 3rd, when, between Pedernales and Cabo Falso, the earth rose to 200 ft. Behind and near the spot where this occurred stood an earth hill about 40 ft. high, which suddenly and entirely disappeared. The base of a hill is a circular pond of salt water, and for a long distance surrounding the earth, which, being suddenly and entirely disappeared, the inhabitants of the locality have become positively terror-stricken, and no inducement will take them within a very long time of the spot."

The *St. John's (New Brunswick) Telegraph*, of March 18th, describes an extraordinary phenomenon which took place in the harbour of that city on the previous day. Early in the morning a strange noise, similar to that accompanying the earthquake on the 22nd of October last, was heard by the residents near the harbour. The tide was nearly down, and though it was quite dark it could be seen that the old ferry, which should be in regular service, had vanished. Messrs. Littlehale & Coram's wharf had nearly disappeared: a piece about 20 ft. by 70 ft. broke off and settled squarely down into the water. A frontage, several hundred feet in extent, running from the line of the demolished wharf towards the breakwater has gone down, leaving a steep embankment, and less than 100 ft. from it, into the harbour, the place where the old ferry landed was. On this spot soundings were made, and where the old ballast or refer was the day before rising above the water 8 ft., were found 6 fathoms of water, showing that even so near the shore as that, the bottom had settled just 32 ft.

The American papers state that unusually severe weather has prevailed in many parts of the country. The *Buffalo Express* of the 17th of March says that the two previous nights rivalled anything that was ever known for inclemency. There was great suffering among the mountains of Utah.

In South America, too, there have been terrible hurricanes and floods; and both in the Pacific and Atlantic many ships have been lost; so that the prediction of a correspondent in the *Builder* of the 19th March as to disturbances

about that time already appear to have been pretty well fulfilled.

In reporting the great storm at Buenos Ayres of the 9th ult., a local paper says:—"People in Europe will read with amusement of men and horses drowned in the streets of Buenos Ayres, of parlor floors giving way, of sailors being washed ashore on planks, or their corpses collected on the beach." Elsewhere in this or a subsequent storm, the severest that was ever known,—100,000 sheep were destroyed by floods. The rainfall is described as having been the most dreadful that ever was experienced in Brazil.

Under the title of "Something the Matter with the Sun," a letter from Rev. F. Howlett, who is well known as an astronomer, appears in the *Times*, in which he says of the "unusually disturbed condition of the solar surface" that the total area of the whole of the spots (on April 3rd) cannot be estimated at less than three billions of square miles. He has never during a period of twenty years seen so great a disturbance. The spotting of the sun, however, is periodical; but on this occasion the spots have been far more numerous and extensive than on any known previous occasion. They have now mostly disappeared.

The latest announcement of physical commotion is under date 23rd April, from Calcutta, to the effect that a violent shock of earthquake had occurred at Dacca.

THE SOAP AND ALUM PROCESS FOR BRICK OR STONE WALLS.

ALTHOUGH much has been said on this subject in the *Builder*, we are every now and then requested to repeat particulars of the process, which is quite simple. The proportions are, three-quarters of a pound of alum to one gallon of water; this composition to be laid over the brickwork steadily and carefully with a large flat brush, so as not to form a froth or rather on the surface; the wash to remain twenty-four hours to become dry. Mix half a pound of alum with four gallons of water. Leave it to stand for twenty-four hours, and then apply it in the same manner over the coating of soap.

In one case the soap seems to have given a bluish tint to the red bricks, which may have arisen from some peculiarity in the soap. Strong evidence has been given in our pages of the advantage derived from this process in various localities. We are bound to say, at the same time, that in a case within our knowledge, where it was applied to a stone front (the stone very absorbent), it did not succeed. It must be applied in dry weather, and carefully.

A NEW PROMENADE FOR BLACKPOOL.

THE inauguration of the new promenade, together with the opening of a new entrance to the north pier, and the unveiling of a colossal drinking-fountain in Talbot-square, was celebrated on Easter Monday.

The sea-fence consists of a sloping breast-work, pitched with stones on a thick bed of clay puddle, the intervals between the stones being filled in with asphaltic or cement concrete. The slope of the breast-work is curvilinear, and one in four on the average. Next to this breast-work, and running the entire length of the town, are the promenade and carriage-drive. The promenade, on an average, is seven yards wide; it has an even surface of asphaltic, and is separated from the carriage-drive by a line of side stones. For the purpose of obtaining space between the houses and the sea for this promenade and carriage-drive, a part of the shore has been regained by an embankment along South Shore, and along the northern district, extending round Bailey's Hotel, by an iron viaduct, which projects over the sea fence. The floor of the viaduct is formed with Mallet's patent buckled plates, filled in with concrete, and finished with asphaltic. The plates are fixed to solid joists, and carried on cast-iron columns, which are screwed down into the solid. The carriage-drive, twelve yards wide, runs parallel with the promenade the entire length, and is formed of shingle, clay, and macadam. It has a footway along the frontages of the adjoining property, and the whole is drained and lighted with gas.

The works, which were designed and carried out by Messrs. Garlick, Park, & Sykes, civil engineers, Preston, were constructed in three

sections, two of which were given to Mr. Robert Carlisle, contractor, Blackpool, and the third work to Mr. Henry Chubbuck, of Preston. The ironwork was supplied by Mr. Joseph Clayton, Preston.

The works have cost upwards of 60,000L. They comprise, amongst others, 135,000 cubic yards of earthwork, 15 acres of stone pitching in the sea fence, 51 miles of piling and plank in the sea fence, 21 acres of asphaltic and cement concreting, 580 tons of wrought and cast iron, 40,000 square yards of carriage-road, with the palisading, railing, draining, and lighting.

YE DREAMING BUILDER.*

"O'er Sooty Austin will I build a shrine!
—And with this thought the holy Prior is fill'd;
The glow of ardor brightens in his eye
And quickens all his soul. Mark he has said
Is all the lines and running craft which build
The massive piles of Norman masonry?
But one thing greater in his mind is wild,
A lighter plan of structure doth he see,
Where strength and beauty blend in perfect harmony.
On this he dreams as the sweet even-tide
—Meet hour for dreaming—mutes the sound;
And from his quiet cell with listless stride,
And eyes down bending on the grassy ground,
—No thought of earth, as eases of night or morn—
He wanders forth, and in his dreams may find
The tapering spire with golden knobs burnished,
In all the light of morning shall he find
A finger to lift up the emblem in the skies!
And in the woods the stately tree assume
The forms of round and tapering spire and grace
Delights the scene, and meeting boughs become
High vaulting groins, in which his mind can trace
His dreaming vision may we embrace
And through the opening of the leaves the light
Of glowing sunbeams falls upon his face!
Thus suddenly there rises in his sight
Wrought millions fill'd with glass with colors rich
And bold, and solemn chanting of the waves
Now, in his dream he breathes on holy ground,
And the million changes of the waves
He hears deep, mellow voices sweetly sound—
(As under lofty domes the ear may find)
When gently moans, with voices combined,
Chant or their vapors low at even-tide.
"I here," he cries, "where God hath placed my mind
The way to build, the lofty spire shall climb,
And tongues shall sing His praise from vesper until
Prime."
"O'er blessed Lady shall a chapel here,
Arched round with many a reedy mould;
And wifed, with his cunning skill, shall carve
The story of his life, and share the toil
In wood how fit, by Jesus basely sold,
Gave up his life, and died upon the tree;
How, in his loving arms,
The humble heart, no recks of what degree
Or birth, or rank, or name, or lineage,
"We're seeking, shall the poor oppressed build
Take heart again and lightly bear his wrong!
This seeing, shall the barnum bring in mind
The story of mercy in the strong
How gracious deeds to gentle birth belong,
And cheer the helmet with a brighter ray
God's banner won in late, or deeds among
The busy-burly of a feudal fief.
For every springs in God, and pride is born of life!"
—JOHN KEATS.

CONSISTENT TENDERS.

SIR,—I send you with this another pretty specimen of contractors' tenders:—

For new roads, &c., on an estate at Staines, for Mr. E. Woodroffe. Mr. R. Gorer, surveyor:—	
Turner & Co.	£285 10 0
Huddell	285 0 0
Strickland	290 0 0
Charles	288 12 0
John	243 0 0
Napoleon	225 10 0
Goodwin	127 10 0
Coker	212 0 0
Smart	178 0 0
James Taylor	165 0 0
Shepherd & Co.	165 0 0
Rogers	161 0 0
James	160 0 0
Hasebrook	145 0 0
Adis	139 0 0
Goodwin	127 0 0
Cook	125 0 0
Porter	95 0 0

The works comprise about 1,770 ft. formation of new roads and footpaths (40 ft. wide), inclusive of stripping off turf, levelling, wheeling, and filling inequalities in same; 1,600 cubic yards of gravel metalling to be dug, screened, sorted, and quartered of a mile, and spread; 50 ft. lineal 2 ft. barrel culvert, 9 in. brickwork in mortar (about 14 rd); 72 feet lineal oak wrought post and rail fence, four times painted in oil, and keeping in repair six months.

What does it mean? Such tendering must make the name of contractor a by-word and reproach!

* It has often occurred to me that the bold leap from the "ye" in the first line of the poem to the "great me" must have been a source of infinite delight to the great me who worked out that translation; and this is the idea I have tried to convey in the following little sketch.—J. K.

"POST AND PAN HOUSES."

In the Assize of 1189, London, panes is used for the wall-plate laid upon a party wall of stone to receive the posts of an upper story of wood. See Hudson Turner's "Domestic Architecture of England," p. 15, &c. And he who gives the lead shall have the clear masonry of the wall, and put his panes upon it, and build."

In Yorkshire, pan-piece is still wall-plate. In Lancashire, a pane is a parlin. In Franco, panne is parlin. See "Viollet-le-Duc," under that word, and under "charpente." Also under "drainage," on the top of a building or diere." Pan, in French, is another word altogether, as may be seen in the same author under "Pan de bois." W. R. COXSON.

TIMBER STACKS AND THE PROPOSED NEW BUILDING ACT.

A MEETING of timber merchants, builders, and others, has been called for (this) Friday, the 29th inst., to consider the 11th clause of the Bill, which runs as follows:—

"It shall not be lawful for any person to erect, rebuild, place, or replace a building built of wood for the purpose of floor-boards manufacture or a pile or store of cut wood or timber on any ground, or on the top of a building or elsewhere, nearer to a street than the buildings forming the general line of building therein, or nearer to a building in the street occupation than 50 ft., unless in every case there is a proper wall or fence or party wall or party fence wall (as such words require) to such words building, of wood or timber, throughout its whole height, from the street and from every adjoining or neighbouring building."

It is quite right that the parties whose interests would be affected by the clause should give it consideration, and obtain for themselves as much latitude as may safely be afforded; but we have too often pointed out the danger of the course now pursued in many timber-yards, and urged the necessity of supervision, for any of our readers to suppose that the principle of the clause will find as opponent in us.

SEWAGE FARMING.

WILL you allow one who has given considerable attention to the "sewage question" to explain his views on the subject, in the hope that the following statement may at least lead to impartial investigation on a most important point connected with this subject.

That irrigation is the best and most profitable mode of disposing of sewage is, I think, now fairly admitted by all who have investigated the matter in all its bearings. This being admitted, it is established, beyond a doubt, that Italian dry-grass and mangold wursel are the two most productive and profitable farm crops that can be grown from sewage. Italian dry-grass must, under any circumstances, always form a large feature in sewage farming, because it is essential to have a large area, upon which the overflowing sewage can at all times be applied, and Italian dry-grass is the only crop which will admit of this constant application. Mangold wursel is, however, essentially the irrigation farmer's tree crop. Its yield is immense. Fifty tons, at least, to the acre may be grown, to a certainty. The facility of transplanting (where plants fail), in consequence of moisture at hand, renders a mangold crop a positive certainty in sewage farming.

The difficulty hitherto with mangold has been, not to grow it, but to know what to do with it. Where a large breadth of mangold is grown, it would be difficult to feed at a profit, more especially as any dry food would have to be resorted to, and equally difficult to sell it at a remunerative price. Demand and supply regulate price in all things, but more particularly in an article whose bulky nature confines its distribution to a limited area. The mere fact of such a large supply being known to be on the market would bring down the price to a minimum.

By my process this difficulty is entirely obviated. I convert the mangold into a cake, resembling linseed cake in appearance, in which state it is as easily transported as any other artificial food throughout the kingdom. It will keep perfectly good for years; linseed cake deteriorates in a few months. Most carefully authenticated trials have proved that it is equally fattening as the best linseed cake.

Let us look at the profits of manufacturing it. Fifty tons of mangold will make 6 tons of cake. Analysis and feeding experiments have proved this cake to be worth 30L per ton. I sows, therefore, will give a gross profit of 60L. Now

as to cost of growing the roots, securing the crop, and converting it into cake. I will at present omit the question of rent. The cost of cultivating an acre of mangold, and securing the crop may be put at £1. This is high. The cost of converting 50 tons of mangold into cake is 71. 4s. total cost per acre, 131. 4s., against a gross profit of 601., to be divided between rent and profit.

I do not ask those interested in the sewage question to take for granted one word I have said, although I pledge myself to do the best of all that I have asserted. All I ask is that they should thoroughly investigate the subject.

I have every faith in the correctness of the analysis as given by Dr. Voelcker, and of the feeding experiments, which have been and are still being carried on.

I am prepared to offer every facility for the most crucial test that this food can be subject to. I fully believe that the manufacture of mangold cake will be the keystone of success to sewage farming. ROSE SMITH.

METROPOLITAN DISTRICT RAILWAY.

At Thursday evening's sitting of the House of Commons, the third reading of the Bill for a line by Queen Victoria-street to the Mansion House was passed by a majority of 20 in a full house. This settles the matter, and shows the House of Commons is concerned, but it is believed that the City authorities will repeat their opposition in the House of Lords.

BELLS AT ST. PAUL'S CATHEDRAL.

Is the patronage bestowed on the Great Bell, it is rather remarkable that his friends should have paid little or no respect to the single service bell which hangs in the north-west tower. I would therefore request to be allowed to send you the statement which has just been worked out by my forthcoming "Great Tones of Bells Letter." I believe it is in the main correct; if not, I shall be thankful to any courteous reader who will do me the favour to prove that I am in error, and so the press shall be corrected.

H. T. ELKACOBES, M.A.

"We come now to the great bell in the south-west tower of St. Paul's Cathedral, London, which is the 'Folke made me, 1716.' It is 6 ft. 10 in. in diameter, as lately measured by Mr. Tyson, and said by Messrs. Warner & the engraver to have been cast by the bell in a flat, but the sound when heard at the greatest distance is flat, or a fifth above the key note.

This is a never used except for the tolling of the hour, and for tolling at the death and funeral of the Royal family, the Mayor of London, the Dean of the Cathedral, and the Lord Mayor should do so in the year 1716. There is a bell in the south-west tower, used for the dinner-bell, inscribed 'Made by Thomas Smith, 1700.' The diameter is only 40 in., and 31 in. thick. This may have been cast from the metal of the bell in the clock tower opposite Westminster Hall gate, which, before the Reformation, was named 'Edward's' after the Royal Confessor; subsequently to the time of Henry VIII., as appears by two lines in Evelyn's 'Gleanings,' it was called 'Great Tom,' as George conjectures, by a corruption of Grand Tom, from its deep sonorous tone.

On August 1, 1666, the steeple, or clock tower, was granted by William III. to St. Margaret's parish, and was taken down, when the bell was found to weigh 32 cwt. 2 lbs. 11 lb. and was bought at 100. per lb., producing 3265. 17. 6d. for St. Paul's. While being conveyed over the shoulders of Westminster, under Temple Bar, it fell from the carriage; it stood erect a shed for some years, and was at length raised, with additional metal, by Philip Whetman, December 15th, 1716. There is an engraving of this bell in 'Antiquarian Repository,' 1st edit., vol. ii., p. 254. This was probably the second bell, the inscription above it to have been 'Great Tom' and 'Great Tom' minister. The engraving is from a drawing originally in the possession of Dr. Doreau.

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instead of twelve at midnight, and thus cleared himself of the accusation, by the saint guard, of sleeping upon his bed. The story is told of St. Paul's bell; but the cathedral had no heavy bell until the above grant by King William, who died 1702. The circumstance is recorded in the *Public Advertiser*, Friday, June 25, 1770.

VICTORIA PATENT OFFICE PUBLICATIONS.

Two Australian Blue Books have been issued by the Registrar-General of Victoria, Mr. W. H. Archer. One is a volume of "Patents and Patentees, from 1854 to 1866, both inclusive." The other is the second volume, for 1867. They were compiled from specifications lodged in the Patent Office attached to the Registrar-General's Department at Melbourne. The number of patents in the first volume is not stated, but there are considerably more than 200 small folio pages in all, and the publication does not contain the abstracts of specifications, with drawings, which are not yet issued. Part I. of the first volume, contains a long list forming the "subject matter, index of patents applied for, and patent granted from August, 1854, to the end of 1866, and is of a very miscellaneous description. Part II. is an Alphabetical Index of Patentees, and Applicants for Patents of Invention, from August, 1854, to the end of 1866. There is also a key of terms and phrases in titles, &c. The second volume is arranged much in the same way, but contains also a "Chronological Index of Patents applied for and Patents granted, 1867." The actual number of patents applied for during 1867 was 99. Of these, 61 were granted, the rest having been refused, or else allowed by the applicants to lapse.

Considering the long period between 1854 and 1866, there are not many patents for building and building materials. Six pages contain them all; but there are others scattered about here and there. Bricks, bridges, cements, floors, girders, roofs, &c., form the chief subjects patented, and there are some as to architectural stone. Of gate-digging patents, of course there are plenty. In the second volume there are only five patents under the head of building and building materials. These relate to bricks and tiles, cements, roofs, and windows. Of patents under the head of food, there are a good few; but that gives us no further compilation to be made. This is a pamphlet titled "Abstracts of English and Colonial Patent Specifications relating to the Preservation of Food, &c." This pamphlet has been compiled from original documents or their printed copies, lodged in the Patent Office, Melbourne. Considering the interest which the subject of food-preservation has been exciting in Victoria, this is a well-timed publication; and it must have cost a good deal of labour in condensation and compilation. It contains brief abstracts of numerous patents for the preservation of food by various processes; with a list chronologically arranged, and index of patentees names. It has also illustrations of apparatus.

SCHOOLS OF ART.

The Birmingham School.—A lecture has been delivered, in connexion with the local Art-Students' Literary Association, by Mr. W. D. Kaimbach (the head master), the subject being "Schools of Art." The lecturer gave a brief sketch of the various schools of art in which the art of painting, sculpture, and design, and, among the latter, he described several of the principal Continental schools, and spoke in favour of the system they adopted in drawing from casts and from nature, in preference to the English system of drawing from flat copies. In the Ecole de Beaux-arts of Paris, and some of the French and other Continental schools, the admission was entirely gratuitous, and great facilities were afforded for teaching design, as applied to industrial purposes. At Nuremberg, in their antique studies, the students made the figure life-size, which we were prevented from doing chiefly from want of room. The students were also taught wood-carving, die-sinking, engraving, and many other branches of art-workmanship; but he thought that, in original design, they were excelled by the students of the Birmingham School of Art. The Leamington School.—The report of the Local Philomathetic Society says—

"The committee for ancient and modern art, in the reigns of the head-master of the school art, Mr. Charles Ryan, who is compelled to give up public teaching

on account of the delicate state of his health. The council cannot allow Mr. Ryan to resign the management of the school of art, which he has so ably and so successfully conducted, without expressing, on this public occasion, a hope that his health may be soon restored, so that he may be enabled in future to devote his comparative leisure time to the more lucrative pursuit of independent work in his profession, as an artist, in which they heartily wish him success."

CHURCH-BUILDING NEWS.

Child's Wickham.—A restoration of the parish church is about to be effected under the direction of Mr. G. H. Hunt, of Evesham, architect. The church has been badly neglected, its roof is almost coming down, and its walls are bulged and much dilapidated. The chancel belongs to Sir Thomas Phillips, and the work of restoration will probably only proceed as far as the chancel arch. The works comprise the taking down the greater part of the nave, and rebuilding the same; new open timber roof, pitch-pine seats, oak pulpit and reading-desk, tile floor, new chancel step, new ringer's floor, new entrance doors, and repairing tower from parapet to base. Mr. Frith, from Coventry, better known as "Sixteen Jack," is the architect. The works will probably cost upwards of 1,000. or 800. of which have been obtained. The stone is from the neighbouring quarries, excepting windows and roof corbels of Bath stone.

Welford.—The work of lowering and levelling the churchyard has been completed, and the restoration of the church will now be commenced. It is intended that the chancel and aisle shall have battlements, and that skeleton doors shall be placed at the west, north, and south porches. Mr. Gibson's contract, amounting to 4,500l., has been accepted. The estimated total cost of restoration is 5,000l., the cost of lowering the churchyard, &c., 250l. Upwards of 1,000. are still required. It is intended to erect an iron church in the churchyard, between the church and the free school, for the performance of divine service during the restoration, for the carrying out of which it is believed the parish church will have to be closed for a period of eighteen months or two years.

Datchetworth.—The church here has been reopened. The architect, whose designs for the restoration have been carried out, is Mr. A. Blomfield, and the work has been executed by Messrs. Lumsden & Son, of Datchetworth, Bucks. The floor of the edifice is paved with Staffordshire tiles, except that portion upon which the feet rest; this is boarded, whilst the seats are of stained wood. On the north side of the church a new window has been put in, corresponding with one at the east end of the aisle. The other windows have been newly glazed, and the stone framework put in repair. The interior of the church has been retained, and a course or two of new colouring has given freshness to the appearance. A spire, with a 54 ft. rise, has been added to the tower, the upper story of which is now to be set-off; it has four new windows of 22 ft. square, and the spire roof contains 16,000 oak shingles, and has four new dormer windows, which were contributed by three of the workmen engaged in the building. Much improvement has been made in the interior of the tower, by the removal of two floors, as well as an old gallery in the tower.

Chinford.—It has been resolved at a public meeting, to put the fabric of St. Mary's Church into a state of repair. It is proposed to expend 4,000l. if subscriptions can be got. A committee has been formed.

Horrogate.—The foundation stone of All Saints' Mission Church has been laid at Harlow-hill. The site was given by the Earl of Harrowood, and also land for a burial ground. The architects are Messrs. Shute & Thompson, Harrogate and Leeds; the design is in the Continental style of Gothic; and the edifice will contain nave, transept, and chancel, organ bay, and vestry, the roof being open timbered, with a tower surmounted by a spire. The church is intended to cost 217.

Wivelsfield.—The old Smeath church of Wivelsfield has been restored and re-opened. The restoration of the ancient parsonage has been commenced by putting in timber roof, and an additional room was required, a north aisle was added, harmonizing generally with the early work, reinserting the ancient features. The chancel has been extended to the east, to the proportion which it ought to have been in the fourteenth century. A large window has taken the place of the early triplet, which is more suitably placed at the east end of the new north aisle. During the repairs of the roof, it was discovered that the south

1. *Builder*, March 30, 1866.

2. See an engraving in Hervey's "Les Dédicées de la Bretagne, 1707," vol. iv., p. 462.

3. Published by authority. John Ferres, Government printer, Melbourne.

and the school will be heated in cold weather by means of hot air. Mr. Perkins, of the cathedral, is the architect; and Mr. Warner, of Malvern Link, the builder. In St. Clement's parish the new infant school is to be built on a space adjoining the present schools, hitherto used as playground. It is somewhat irregular in shape. The architect is Mr. Ernest A. Day. The front wall will be close up to the line of Chesham walk, and the entrance will be at the end near to that by which access is obtained to the existing schools. A space of 9 ft. at that end will be walled off to provide the porch and a cloak-room, and the remainder will be the school-room, the dimensions of which will be 47 ft. by 20 ft. The roof will be an open one, the interior height being 12 ft. to the wall-plate, and 28 ft. to the apex. The dressings of the building are to be of stone. Messrs. Joseph Wood & Sons are the builders.

Books Received.

"PALESTINE Exploration Fund: Quarterly Statement, No. 5. January 1st to March 31st, 1870. Society's Offices, 9, Pall-mall East." These quarterly statements become more and more interesting, and the one for the present year affords previous statements in that respect. Besides the general progress, and the Moabite stone, with an illustration, it gives an account of temples in Com'e-Syria, the summit of Hierom, the rock tombs of El Medyn, and various other interesting matter. "Report on the Means of Beneficially Disposing of the Sewage of the Borough of Leicester." By Mr. Baldwin Latham, C.E. (Spencer, printer, Leicester)." Mr. Latham's scheme for irrigation at Leicester, of which we have already spoken, is here reported on. His estimates the cost of the proposed works as follows:—

Proposed high-level intercepting sewer to irrigation area 5 ft. by 3 ft. 4 in.	£2,500 0 0
22 in. iron pipe for present pumping works, with stone drains, &c., complete	4,000 0 0
Laying down 600 acres of land with all materials, &c.	7,000 0 0
Alteration of existing engines	500 0 0
Sewage extractors and buildings	2,000 0 0
Making a total of	£22,000 0 0

The total annual expenses are estimated at £6,121; and the total annual value of the produce at £7,950; leaving a net profit of £3,800.

"Report of the Sanitary Committee of the Borough of Nottingham for the Year ending December 31st, 1869. (Allen, printer, Nottingham.)" From this report it appears that the annual rate of the mortality for 1869 was twenty-three deaths to 1,000 persons living. Latterly, the town has been becoming more unhealthy. The increase of dwellings built below the flood level in the meadows is deprecated. The report is signed by the chairman and vice-chairman of the committee, and by Mr. W. Richards, the sanitary inspector. Two useful tables, one of meteorological observations supplied to the Registrar-General by Mr. M. O. Tarbotton, C.E., F.R.S., &c., surveyor to the corporation, and another on rainfall, also by Mr. Tarbotton, are appended to the report. "Report on the Maritime Canal connecting the Mediterranean at Port Said with the Red Sea at Suez. By Capt. Richards, R.N., F.R.S., Hydrographer to the Admiralty, and Lieut.-Col. Clarke, C.B., R.A., Director of Engineering and Architectural Works, Admiralty. February, 1870." This report has just been issued. The general conclusions to which both officers come are favourable to M. de Lesseps's great undertaking. With reference to Port Said they observe that, though incomplete as a harbour, the rate of accumulation of the deposits which are carried seaward from the Nile is so slow that any practical inconvenience to navigation from this cause may be considered remote, and, when it arose, might easily be remedied by an extension of the breakwater. Of the canal they say that most of the physical difficulties which it was anticipated, would operate prejudicially on it, have proved to be fallacious. They state that, for all steam-vessels, or vessels towed, ranging between 250 ft. and 300 ft. in length, with 35 ft. beams, and a draught of 20 ft., it will be a convenient highway; but for the transit of larger vessels special arrangements, such as are made on a single line of railway, should be enforced. They then give calculations to show the advantages to England

which the canal will offer over the route to the East by the Cape; and selecting Gale as a standard of comparison in point of distance common both to India and China, they show that the difference in favour of the canal is 5,135 miles, equivalent, in point of time, to thirty-six days. Taking a vessel of the *Falgate* class as an illustration, they find that the special cost of sending her by the canal, including all charges, and the extra coal which would probably be consumed, would be 895*l.*, to be placed against a saving of thirty-six days, leaving out of consideration the wear and tear of a voyage round the Cape; and they accordingly think it would be desirable to send all small or moderate-sized vessels through the canal. The widening of the canal they consider an essential to its final success, but think the present company are not likely to carry this out. They point out the difficulty in the way of doing so while traffic is going on, and reported to be made and numerous sections of the canal. We may here remark that an interesting example of the facilities to trade and traffic presented by the Suez Canal has just been afforded by the last voyage of the *Danube* steamship from Bombay to Liverpool, which sailed on the 21st inst. for Bombay on February 13th. Bales of cotton arrived at mills in Huddersfield on March 25th, and on the 29th yarn manufactured from it were sent out by the *Danube*, on her return voyage, in forty-five days from her departure from Bombay. The voyage by the Cape usually averages 100 to 120 days. *Times*, *Express*, *News*, &c. and 6*th* (Hardwicke). This periodical sustains its interest as a monthly medium of interchange and gossip for students and lovers of nature. "First Quarterly Part of the Family Friend." This is a new household journal of a superior character, in which Mary Howitt, C. G. Hall, and other known writers contribute. It is well illustrated, and is intended to aid in superseding the pernicious literature which is now finding its way to the homes of England.—We get a paragraph from the current number of *The Quiver* :—

"If we have attained any social standing, or made a honest name, as a plain front apprentice, or some in an order of a profession, or to earn a scanty pittance as clerks, that sit their 'nicks' into working men, as carpenters or coopers, builders or sign-makers, they might soon earn three times as much as a clerk, and hope, by honest means, to become money, to become money, they may work as hard as they like at their profession, at cricket, at boxing, at grammar, but badly they may make their own bread, and among the Jews, ungentle, degrading. This absurd prejudice has never yet found its origin in the East, to this day, 64 centuries, among the Turks, a handicraftman often rises to office of state, and now and then to the very highest office. And even in the Sultan's seraglio, the young princes are taught some handicraft, in order that, if misfortune should befall them, they may have recourse to their own bread. Among the Jews, the Eastern races the sensible small custom was more prevalent than it is in modern times, and in no nation was it so generally observed, or more honoured in the observation, than among the Jews."

Miscellanea.

Society for the Encouragement of the Fine Arts.—On Thursday, the 21st inst., Mr. Henry O'Neill, A.R.A., gave a lecture on "The Influence of Art on Civilisation, Music and the Drama, and the Influence of Fashion on Art." From the influence of music on art he proceeded to the influence of drama, which he considered gave the clearest insight into the moral and intellectual being of a nation. He regretted the present lavish expenditure upon dramatic trifles, the taste for dramatic realisms that destroyed all serious illusion, and the vicious sensationalism that degraded the stage. The remedy which he suggested was an efficient censorship of the drama, such as existed at Athens in the time of Phrynichus. Mr. T. R. S. Temple said that English dramatic art had rather improved than declined of late, and that Dr. Westland Marston and Mr. T. W. Robertson must be excepted from the general condemnation of dramatic artists; whilst Mr. Sadler attributed the decline of the higher forms of dramatic art, in part, to the incompetency of actors.

Antill's Stench-Trap.—This patent stench-trap, with Stidder's Patent Lock Gate, is a trap whether the lock grating be on or off. It is made from pig lead, and is perfectly smooth inside; can be easily cleaned out, and can be added to a lead pipe, or fitted to other drainage pipes are used. It is recommended for the top of waste pipes in cisterns.

The Kist-Vean of Wendron, Cornwall.—One of the most interesting spots in this district is the summit of a circular pyramidal hill, which lies to the east, and within a mile of Wendron church-town. Here is a curious cave or kist-vean, on the highest part of the hill, surrounded by a circular inclosure of earth and stones. The *Gornick* writes of this interesting spot:—"Discovered a small path sunk 2 ft. below the surface. I followed the direction it led to, and presently found myself in an underground chamber, perfectly square, with the walls very evenly and regularly built of stones, snugly built together without mortar or cement. These stones were generally of one size nearly, though one upright and this slab was 5 ft. long by 4 ft. wide. On measurement, I found the walls to be 5 ft. 9 in. high and 8 ft. across. The doorway was remarkably narrow,—1 ft. 3 in. across and 6 ft. 9 in. high. The roof of this building is one flat rock of granite, 10 ft. in length and 10 ft. in width, averaging 1 ft. in thickness. This is supported in its position by the upper stones which form the walls. On the exterior is an artificial barrow heaped up against the wall. It appears to have surrounded the whole cave at one time, when the doorway was blocked up. At the north-west corner of this room is a curious recess, 2 ft. each way, and very systematically arranged. This, when viewed from the summit, appears not unlike a chimney, but its original purpose cannot be determined. [Was it a ventilator?] Within the interior of the building, at the locality there had not been current a single legend, not even the remotest tradition, which in any way decides the primitive use of this solitary object."

Value of Land in the City.—Some plots of land in Queen Victoria street, City, the new thoroughfare from the Poultry to Cannon-street, have been let at the Auction Mart, by Messrs. Foster, of Pall-mall, by direction of the Metropolitan Board of Works, on building leases for terms of eighty years. Lot 1. The plot on the north-east corner of Queen Victoria-street and the Poultry, with frontages to each, amounting together to about 150 ft., and containing a superficial area of about 2,332 ft. There are two houses on this plot, in the occupation of Mr. Goode, tobacconist, and Mr. Brown, tailor, who are both under agreements to quit at a month's notice. This plot was eagerly contested, and was ultimately knocked down by Mr. Wheeler, of the Poultry, at the price of £2,000, per annum. Lot 2. The plot adjoining the preceding, on the east, with a frontage to the Poultry and another to the new street. The portion next the Poultry is in the occupation of Messrs. Wheeler & Co., and is subject to a lease (61 years), but possession of the portion of the plot facing the new street is to be given to the tenant. This plot was disposed of to the same person at 850*l.* per annum. Lot 3. The plot on the south side of the street, near the Mansion House, having a superficial area of about 6,296 ft., with a frontage to the new street of nearly 105 ft., a frontage to Charlotte-row of nearly 95 ft., a frontage to Brookersbury of about 56 ft., and a circular frontage to the Poultry of about 20 ft. This lot was knocked down at the price of 6,400*l.*, but not sold, being under the reserved price fixed upon by the Board of Works.

The Royal Society's Conversations.—Sir Edward Sabine gave his second conversation on Saturday night, the 23rd, at Burlington House, Piccadilly, and the following subjects were exhibited, including, by permission of her Majesty, some beautiful drawings by Leonardo da Vinci, Michelangelo, and Raffaele; and an interesting ancient MS. from Abyssinia, the subject being "Discourses on the Virgin Mary." Each page of this manuscript is embellished with a coloured drawing. Natural History was illustrated by the marvellous series of echinoderms, sponges, and foraminifera, illustrative of deep-sea life, dredged by Dr. Carpenter; by M. Tegetmeier's singular living examples of the development of the Mexican axoty into a salamandroid amphibian; and Dr. Palmer's very nice drawings of insect animals from the China Sea and the Indian and Atlantic Oceans. Mr. Haviland's valuable and instructive maps of the distribution of diseases excited considerable interest.

Preservation of Stone.—M. Belincoourt writes to us from Boulogne, asserting that he has discovered a means of promptly staying the action of the atmosphere on limestone buildings susceptible of absorbing water. Water is retained until this that we need something more than mere assertion.

A "Royal Amphitheatre" for Brighton.

A party of enterprising gentlemen propose to erect the Old Circular Bath, which forms the break in the Marine-drive at the Junction-parade. This, in four days, they have got converted into an amphitheatre, and opened to the public. The remodelling was done by a well-known contractor, Mr. Blackmore, and was superintended and carried out by his son, Mr. John Blackmore, jun. Within the limits of the old bath, a ring of 27 ft. in diameter, surrounded with four rows of seats, covered with crimson cloth, has been made. On the north side, where the bathrooms formerly stood, have been erected a promenade and some private boxes. Its seating capacity is estimated at 800. A commodious bar has been erected in the lobby to the original entrance to the baths, and as Clarendon mansion has also been purchased, it will most probably, before long, be fitted up as a hotel or club. The panning of the dunes has been decorated by Mr. Elaker, the other decorations having been erected by Mr. R. Bonner. Round the base of the opols runs a circle of jets, serving to illuminate the ring, and nearly the whole place. It is to be hoped that in this rapid conversion all due care of the public safety has been taken.

East Grinstead.—The Most Church, which has been built by Mr. E. Steer, of East Grinstead, from his own designs, at a cost of 1,000, raised by voluntary contributions, was opened to the public worship. The church is intended to be conducted on the Free Church principles, and in accordance with the Congregational form and order. It is situated upon a portion of the Most Estate, at the junction of the Most-road, within a few minutes' walk of the railway station, and is built in the Early English style of architecture, with native sandstone, in random courses, capped quoins, rubbed window jambs and mullions, and roofed with slates; it has a tower with a stone spire on the north side, about 70 ft. high. The interior consists of a nave and side aisles, timber-framed clerestory, with side lights supported on iron columns. The eastern end terminates with an apse and vestry; and at the western end over the lobby is a gallery, which is reached by stairs in the tower ascending from the lobby. In the tower is hung one of Vicker's patent steel bells. It is estimated that the church will seat 400 persons.

Sanitary State of Monmouthshire.—The state of some parts of Monmouthshire, as regards sanitary arrangements, is reported to demand serious attention. The want of privy accommodation, which prevails to an extent that will scarcely be credited, the defective drainage, and the proximity of pigsties to dwelling-houses have done just what might be expected. Pontnewydd and Cwmbarn, villages between Newport and Pontypool, have suffered frightfully from typhoid fever. Blaenafon, a town numbering some 8,000 inhabitants, is in a deplorable state; and measles are carrying off the children at the rate of six or seven a day. Such was the number of deaths there last week that it is computed that the death-rate had risen to the frightful figure of 163 per 1,000, instead of the usual proportion of about 22 per 1,000.

Roots in Drains.—Mr. Crabtree writes:—"Some root fibres have been taken from the water-pipes laid for supplying Redcar with water. The most bulky one filled up the 5-in. glazed earthenware pipe as compactly as a plug of wood could have done, so that no water could pass it. We found a great many pieces of smaller growth. They appear to be all of one character, and are probably the roots of some elm trees which are growing not far distant from the pipes, and would first insinuate themselves in microscopic lines into very minute openings, and then swell, spread, and ramify to the extent shown." A knowledge of this circumstance may be useful.

East Archaeological Society.—At a meeting of the council of this society, held on Monday, the 11th inst., at Chillingham House, Maidstone, the Earl Amherst, president, in the chair, several preliminaries were settled as to the annual congress of the society, to be held this summer at Sittingbourne. After the meeting many of the members inspected the remains of the Roman villa on the estate of Mr. G. E. Sayer, at the end of Stone-street, now being excavated by the society, under the superintendence of Mr. W. J. Lightfoot, their assistant secretary.

The Architectural Museum.—Sir Bartle Frere, one of the Council for India, will lecture here on Wednesday evening, May 25th.

Memorial of the Greek Revolution.—The King of Greece, we see from the *Morning Post's* Greek correspondent, has issued an ordinance authorising the erection of a national monument to the memory of the services and exploits of the Greek Revolution. M. Twiss, a well-known architect, has been charged with the design of this monument, which is thus described in the *Courier d'Athènes*:—

"The monument will be erected in the Place de la Concord, one of the most beautiful squares of Athens. The principal figure is a woman standing, who represents Greece. Four other females seated represent the Peloponnese, the islands of the Aegean Sea, and those of the Ionian. Four statues will represent in front the Archangel Gabriel blessing the flag of liberty; on the right, the siege of Missolonghi; on the left, the combat of the 'Three Heroes' of the Revolution; on the left, the immortal memory, and King Otho. The seat of the principal personage will bear on the face the inscription, 'The Nation to the Liberators of all Countries; and on the back, 'Union is strength.'"

Completion of the Clerkenwell Police Station.—This station, which is situated in the King's-cross-road, is from designs by Mr. T. O. Sothery, late surveyor to the Metropolitan Police. The amount of the contract was about 8,000l. The building is five stories high, and has accommodation for ninety-six constables, two inspectors, one superintendent, and one district superintendent. There are eight cells. Each of the floors is on an average 11 ft. high. The station is built with stock bricks, and the front windows and doorways have Portland and Tibury stone dressings. The builders are Messrs. Lacey Brothers, of Barking.

Waste Pipes in Cloisters.—In making the sanitary system of the Highgate Schools, it was discovered that the waste-pipes of all the water-cisterns communicated directly with the drains, and that the water was contaminated in consequence. Twenty-seven children have been treated in the Fever Hospital, and it has been determined to remove the whole of these remainings to Bath-street, in order that further improvements in the building may be made. It is also proposed to erect a reception-ward and infirmary. There have been no fresh cases during the last ten days.

A Pseudonym.—Sir: The *Builder*, in a paper on "Easter Island," which appears at p. 323, gives an extract from a lecture delivered at our antiq. by one of the lecturers speaks of Mr. Herman Melville, an intelligent American mariner. Permit me to inform each of your readers as may not be aware of the circumstance, that the above name is understood to be a pseudonym for Mr. Herman Merivale, C.B., Under-Secretary of State for India. I presume that he has availed all such wild odes by this time.—A. H. GENT.

The Operative Bricklayers and the National Education League.—The Operative Bricklayers' Society has become a subscriber of 100l., in ten years, to the funds of the Sheffield Branch of the National Education League. The society has forty-four branches scattered all over the country; and of its members, 655 voted in favour of the subscription, and 150 against it.

The Saving of Life at the Thames Embankment.—When the Embankment wall was built, the placing of chains along the wall so as to aid in the saving of life, was suggested in our columns. In a recent verdict of a coroner's jury, we observe a recommendation to this effect was appended to the verdict.

A Grammar School for Barnaby.—A movement is on foot at Barnaby to found a Grammar School, and towards the object Mr. Samuelson, M.P. for the borough, offers 1,000l.; Colonel North, M.P., and Lord Bays and Seale (the High Steward), promise each 100l.

Freemasons' Hall, Lincoln.—This building, which is to be erected upon land in Newland, will very soon be commenced. We are informed that in addition to the ordinary requirements of a Freemason Lodge, a room 70 ft. by 32 ft., and 30 ft. high, is to be erected at the back.

Albert Museum, at Exeter.—At Exeter, the Albert Memorial Museum, which is now finally completed, was handed over to the local council of the city by the trustees. A view will be found in a previous volume of the *Builder*.

The late Mr. Maclellan, B.A.—The death of this great artist will have been heard of by most of our readers, and with regret. We may find an opportunity to speak of him.

Fine-Art Exhibition in Ripon.—This exhibition has been opened by Earl de Grey and Ripon, who delivered an address on art-education on the occasion.

TENDERS.

For roads and other works at Trouville. Messrs. N. & H. Harvey, architects. Quantities by Mr. C. A. Gould:—

Compensation	£12,253 0 0
Young	10,000 0 0
Brace & Son	10,000 0 0
Roberts	17,461 0 0
Johnson	10,000 0 0
Coker	13,264 0 0
Leachard	14,253 0 0

For erection of a shop, with basement, at 300, Strand, for Mr. T. H. Ferrier. By Messrs. H. H. Rowley, architect. Quantities supplied by Mr. T. T. Green:—

Scriveners White (accepted)	£76 0 0
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For new stabling and additions to Stoke Hotel, Guildford. Mr. Henry Peak, architect:—

Stewart	£261 0 0
Mason	618 0 0
Smith	541 10 0
Forster & Son	637 0 0
Footner	467 0 0
West (accepted)	475 0 0

For houses for Mr. Edwin Bostock, Stone, Staffordshire. Mr. Samuel Dorman, architect. Quantities supplied by Mr. Mansell:—

Frearley	£1,106 0 0
Isely (Longton)	1,100 0 0
Wickford & Son	637 0 0
Isely (Dishmore)	1,098 0 0
Hatfield (accepted)	1,090 0 0

For alterations and additions to the residence of Miss Bromhead, Bedford. Mr. F. T. Mercer, architect. Quantities supplied:—

Quayley	£230 0 0
Spencer	316 10 0
R. Haynes	350 10 0
Coleman	350 10 0
Potter	394 0 0
Richards	390 0 0
Diamond	390 0 0
Mercer	390 0 0
W. Haynes	390 0 0
Smith	390 0 0
Corby	390 0 0
Wickford & Son	390 0 0
Wootton	397 0 0

For new schools for St. John's Foundation Society, Leatherhead. Messrs. Benjamin Ferrier and J. H. Good, architects. Quantities supplied by Mr. Northcote:—

Hill & Sons	£1,100 0 0
Johnson & Son	1,100 0 0
Myers & Sons	13,806 0 0
Jackson & Shaw	17,540 0 0
Batclaw	13,906 0 0
Mansfield, Price, & Co.	11,011 0 0
Dore, Brothers	12,598 0 0
Sherbrooke	13,274 0 0
Godard	13,980 0 0

"We are asked to mention that Messrs. Ebb's tender included by accident an addenda bill of omissions, 2,090l."

For the erection of a dwelling-house and stable at Chislehurst, Kent, for Mr. C. J. Cottrell. Messrs. Sealey & Son, architects:—

Candler	£1,800 0 0
Roberts	2,090 0 0
Holland & Hannen	2,478 0 0
Brown	2,495 0 0
Tanner & Son (accepted)	2,549 0 0

For erecting iron railings, on a Portland stone curb, on two sides of the grounds of the Beames' Hospital, sea Induray, Greenwich:—

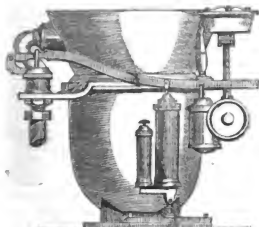
Cole	£1,136 0 0
Featherstone & Walker	1,076 0 0
Turner & Co.	1,040 0 0
Turner & Co.	1,040 0 0
Cotton & Co.	998 0 0
Jackson & Shaw	998 0 0
Shutman & Co.	980 0 0
St. Paulina Ironworks Co.	846 0 0
Hood & Co.	846 0 0
Victoria Ironworks	875 17 0
Hill & Smith	846 0 0
Roberts & Co.	846 0 0
Barnes	765 0 0
Shutman & Co.	765 0 0
Hannam & Co.	772 0 0
Bones	771 10 0
Barnes	740 12 0
Hobbs & Batclaw	732 7 0
Jukes, Coulson, & Co. (accepted)	710 0 0

Accepted for building a pair of semi-detached villas in the Park, Hill, for Mr. W. Watson. Mr. H. G. Smith, architect. Quantities supplied by Mr. W. H. Rowley:—

Bricklayer	£1,100 0 0
Mason	178 0 0
Bricklayer	178 0 0
Dawber & Son	88 14 0
Carpenter and Joiner	630 0 0
Smith and Plasterer	57 13 0
Plumber, Glazier, and Gasfitter	360 0 0
Painter	37 10 0

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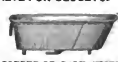
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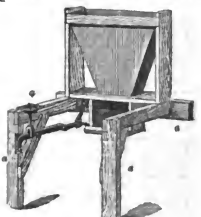
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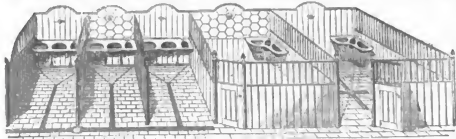
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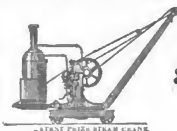
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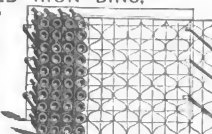
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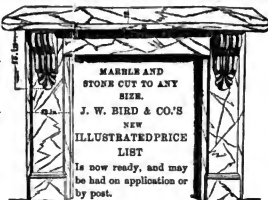
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The Builder.

VOL. XXVIII.—No. 1422.

Father Nile.



8 We pass along the banks of the famous river which are bordered as far as the eye can reach with waving crops of green maize, interspersed with the burst-

ing pods of cotton, and overtopped by groves of date-palms,—as we wind along the narrow paths spared by the rapidly-increasing waters, and listen to the Arabs rejoicing as the flood mounts higher and higher,—we cannot but contrast the effects produced upon the soil by the annual inundation of the Nile with that produced by floods in other countries; nor can we help being struck by the cheerfulness it produces amongst the population here, while elsewhere a flood is a great calamity, and is the cause of confusion, mourning, and lamentation. We particularly remember when at one period of our lives it was our fate to reside on the top of a mountain in Asia Minor, overlooking a vast plain, which was intersected by a river noted in ancient history; that after a few weeks of constant rain, we were one night roused from our slumbers by a combination of apparently unearthly noises, by an incessant stamping of hundreds of hoofs on the rocky road which led to our dwelling, mingled with bleating, neighing, baying, hoarse shouts and occasional shots, such as might have led us, had we been Easterns, to believe that our lonely hut was besieged by a legion of jins and demons. Upon rushing out, revolver in hand, we were as much mystified as before, for we saw in the dim light a number of black forms approaching by a series of leaps. When, however, our trusty and very watchful guards had been aroused from their slumbers, they explained to us that these leaping forms were those of droves of horses from the plains, hobbled to prevent them from running away, accompanied by goats, sheep, and oxen, all compelled by the rising flood to take refuge on our mountain, and that the shots and cries were signals made by those drovers who had already escaped to warn their fellows to follow them to the heights. The next day we saw that the ancient river had burst its banks, and that where yesterday there were farmyards, homesteads, and cultivated fields, there was to-day but a lake of sluggish water some four or five miles broad. Days of labour of ploughing and sowing had been rendered useless, and all the seed sown in the fields swept away in one night. All communication was cut off from the opposite side of the valley for at least a month, and both peasant and proprietor suffered considerable loss. But in Egypt, on the contrary, the higher the water the greater the crop, and a good high flood means a year of plenty. The bounteous arm of Father Nile fertilises the otherwise arid sand, and makes it bring forth all green things in abundance. We reflect on this as we pass along his banks, and we sum up how much the whole world, and even we ourselves, owe to this parent of streams. Not a little, truly; for the germs of the entire family

of the arts and sciences were, so to speak, engendered in his slime.

All great cities were in ancient times founded upon rivers which bore their argosies upon their bosoms, and supplied them with water for drinking, for ablation, and for purification. No wonder, then, that such a prodigy of a river, which, in addition to these benefits, fertilised the country near it every year, attracted one of the earliest of peoples to settle on its banks. Their territory, by its very shape, that of a long strip of land on the borders of the river, 500 miles long by about 15 broad, surrounded by deserts at the sides, and difficult of approach from the sea, protected the inhabitants from invasion, and allowed them to cultivate the arts of peace century after century. On account of the excessive clearness of the atmosphere in this region, and the consequent brightness of the heavenly bodies, these early settlers were induced to study them, and thus became the originators of astronomical science. Although they did not learn to map out the stars with the signs of the zodiac, as the zodiacal table carved at Dendera would at first sight lead people to suppose, but learned the signs from the Greeks, yet they must have been acquainted with them from the earliest time; for we find that they symbolised the rising of the Nile by that mysterious figure, the Sphinx, which is half woman, half lion, to represent a combination of Leo and Virgo, because the inundation occurs when the sun passes through the houses of these two constellations.

Again, when the Nile deposited his annual load of mud he destroyed all boundaries and removed all landmarks; therefore the owners of fields had to make observations, so that when the water had subsided they could, by means of triangulation, establish their former boundaries: hence the origin of Geometry or the measuring of the earth, and hence the business of the Land-surveyor.

But more important than all to them was the management of the irrigation. They soon found out that if Father Nile rose 15 cubits they should roll in plenty, but that if he rose only 8 cubits they should be pinched by famine: consequently, long before the time of Joseph, engineers constructed vast dykes, drains, lakes, reservoirs, canals, and locks, to regulate the supply of water. One of their kings constructed the lake Moeris, to receive the superabundant water in years of great floods, in order that it might be conveyed to the fields by means of canals and locks when the flood was low. Everywhere in the valley of the Nile may be seen traces of these works. Who can doubt, then, that the Egyptians were the inventors of Engineering? Their road to the Pyramids and the machines used in their construction are other proofs that they had some science amongst them; and if further evidence is required, can we not assert that the Suez Canal, which has just been reopened through the energy of M. de Lesseps, was originally their work? Hear what Herodotus says about it.—This prince (Necho) was the first that began the canal leading to the Erythrean Sea, an undertaking which Darius the Persian in later times continued. The length of this cut is a voyage of four days; its breadth is made such that two triremes may pull abreast. It begins a little above the city of Bubastus, and ends in the Erythrean Sea, not far from the Arabian town of Patmos.

Strabo gives further particulars respecting it. He says, that Darius desisted from the work when it was nearly finished, "influenced by an erroneous opinion that the level of the Red Sea was higher than Egypt, and that if the whole of the intervening isthmus were cut through, the country would be overthrown by the sea." We see that history repeats itself, as far as erroneous opinion goes. Would that our engineers, who reported on the feasibility of making the canal, had read Strabo before penning their re-

port, for he goes on to say, "The Ptolemaic kings, however, did cut through it, and placed locks upon the canal, so that they sailed when they pleased without obstruction into the outer sea and back again."

Other feats were performed by their engineers. A chamber, hewn out of a solid block of stone measuring 21 cubits outside, by 14 by 8, was conveyed from Elephantine to Sais, a twenty days' voyage in those days. It took two thousand men ten years to effect its transport.

As to the fine arts, Herodotus tells us that the Egyptians were "the first to erect altars, images, temples, and to invent the carving of figures in stone;"—the first architects, painters, and sculptors;—and their works still remain in the stupendous temples of Thebes, Dendera, Edfo, and Philæ, and are likely to remain when our more scientifically constructed structures have crumbled into dust. At first the cells of their temples were roofed with single stones; as the temples increased in size they required columns for the support of these roofs. These columns, at first square and short, became polygonal and round, and shot up by degrees, till at last they were crowned with capitals representing the lotus and the palm. Subsequently the one cell was multiplied to three or four, approached through courts and by a *dromos* bordered by sphinxes.

The Greeks borrowed the *dromos*, or sacred way, from Egypt. The Temple of Apollo, near Miletus, was approached by such a "via sacra," lined with seated figures, quite Egyptian in character, and resembling the statues of Memnon on the plain of Thebes in general style. Several of these figures are now to be seen in the British Museum. The Greeks also borrowed from the Egyptian temples the *Temenos*, or outer court, and the *Proneos* and *Naoi*, but they departed from the original type in placing their columns outside, instead of inside, their temples.

One of the most extensive architectural works of the Egyptians was the Labyrinth, near Lake Moeris, which was used as a house of assembly for the representatives of the different divisions of the country. There were 3,000 chambers in it,—1,500 on the lower and 1,500 on the upper story. Twelve courts surrounded it, and a single wall bounded it. Remains of the Labyrinth still exist, and have been fully described by Lepsius.

As to their sculpture, no one who has studied the Egyptian lions, bulls, rams, and human figures in the British Museum and Louvre, could deny that they are copied closely from nature, and every one must allow that though art in Egypt became conventional at too early an epoch, and was content to repeat itself for centuries, the colossi and other similar statues were great achievements for so early a period of artistic knowledge.

As to their painting, or rather the use made of it, we may learn a lesson from them. They covered the walls of their public buildings with history. We leave ours blank, or cover them with falsehoods; for a painting of an historical event, unless its costumes and accessories are as accurate as the state of knowledge can make them, are manifestly false. Some countries have learnt this lesson, why should not we? Munich, by the pictures on her Isar Thor, outside her Pinacothek, and in the arcade of the Hof Garden, reads her people lessons—pleasant, picturesque, and, we hope, profitable. But we, alas! are not artists by nature. Art amongst us is of forced or exotic growth.

We have seen that Astronomy, Geometry, Land-surveying, Engineering, Architecture, Painting, and Sculpture, had their origin on the banks of the Nile, and that even we of the nineteenth century might learn something from the ancient Egyptians. Our rulers, too, might learn something from their rulers, for in the islands of Rhoda and Elephantine are wells communicating with the river, with columns standing

in them, on which were registered the heights of the various inundations, and according to this registry the taxes were arranged on a sort of sliding scale; if the river was high the taxes for the year were raised, if low they were lowered. We fear it will be long before our Government will thus make allowances for "hard times."

Such was Egypt of the earliest times. Under the Mahometan rule its engineering works were neglected, and its canals and reservoirs became choked up. The natural fertility, however, is so great that the country flourishes notwithstanding these disasters; and there is reason to believe that under an enterprising Government it might become one vast garden for cottons and cereals. What are we about that we ignore this field for enterprise, though it is our half-way house on the road to India,—that we allow Frenchmen to have the merit of opening the way for us, and of pointing that influence in the country which a successful undertaking will always give the nation that carries it through, among Eastern people? We are but poor slow coaches after all. It is thirty years since Professor Wheatstone's then novel invention for spelling words slowly by means of electricity was exhibited in the Adelaide Gallery, and we have not yet girdled the earth with our electric telegraph. It is fifty years since railways were invented, and yet we have not constructed one by Bagdad, across the easy desert to our twin empire in the East, though we were in a sad strait for one eight years ago, and almost lost possession of India for want of it. *En attendant*, and while it is being constructed, let us shorten the journey to India by a few days at least, by making a railway to the base of the Nile as far as Thebes, and then across the desert to Kossair; let us dig up the harbour of Berenice, of Albus Portus, or the Mysohorom of the ancient world, and spare our travellers the dangers and *désagrément* of a voyage up part of the Red Sea at least; let us build our winter villas on the banks of the Nile, and follow the noble pioneer, Sir Samuel Baker, in the conquest and civilisation of the savages of the interior of Africa.

ARCHITECTURE AT THE ROYAL ACADEMY.

THE retreat from the crowd, talk, and bustle of the larger saloons of the Academy Exhibition on the first day, to the comparatively monastic seclusion of Gallery No. IX., affords a certain appreciable relief, which may be taken into account as the one compensation for the despondency into which the architectural mind is prone to fall, in regarding the discrepancy between the numbers and apparent interest of the spectators in this as compared with the other galleries. A young lady or two attracted by the view of "a very nice house," and a few miscellaneous architectural drawings, including especially a pediment and trion, and letting out scattered bits of incoherent criticism, seem to form about the average refinee to the architectural designs. We speak here more in sorrow than in anger. It would be scarcely reasonable to bring any definite complaint against the mass of visitors for their indifference, for (as we observed recently when advocating the retention of the separate Architectural Exhibition) drawings representative of architectural design stand on quite a different footing from other drawings, as being only a means and an illustration to an end; whereas the latter are themselves the end and completion of the artist's idea. We cannot expect the average of visitors to draw this distinction, and therefore must be content to find drawings which, as mere drawings, we no doubt for the most part less effective than those in the water-colour room adjoining, or than such things as Mr. Haden's clever and effective sketches on the opposite wall, looked upon with less interest by those who are not accustomed to trace in their minds the connexion between an architectural drawing and the final result which it shadows forth, much less to consider how very important a part many of these drawings, if executed, will have on the civic or domestic life, as well as on the outward aspect, of the neighbourhood in which they may be erected.

One thing is, at all events, evident on looking at the drawings (all perspective views, with two or three exceptions) representing architecture at the Academy, that Gothic is in the ascendant, so far as this display is taken as a typical one. Out of seventy-eight drawings placed in the catalogue as architectural, only seven are in any style generally accepted as Classic, and of these only five are of works executed or

proposed to be executed. We may roughly class the whole under the heads Ecclesiastical, Civic or Public, Domestic, and Decorative design. Among the first are two churches, by Mr. Street, in course of erection, "St. John's, Turkey" (808), and "St. Peter's, Swinton, near Manchester" (818). Each of these exhibits the characteristics we have come to associate with this architect's ecclesiastical designs,—breadth of wall surface, picturesque effect obtained rather by the disposition of some mass of stone in various places than by moulding or surface decoration, general appearance of repose and stability, married, however, by a studied plainness in external design, which may even be called effacement; as, for instance, in the masonry wall arcade, without impost or moulding save a mere chamfer, in the tower of St. John's Church. In the other design, that of letting the outer members of the archivolts mouldings of the aisle windows die into the side of the buttresses is questionable, as tending to give the appearance of the wall being weakened below this point, the line of the buttress being continued up to what should be the second plane of the jamb mouldings. Both these drawings, however, exhibit the true feeling for the art of Masonic design, as distinguished from mere surface ornamentation; and in one of them we may notice the solidity of expression obtained by keeping the base of the tower flush with the aisle wall, without any break,—a treatment more common in Italian than in Gothic design. Much of the same sort of merit belongs to the "Interior of St. Peter's, Deptford" (766), by Mr. Marshall, which, indeed, is so much solid as ponderous, but is in no sense throughout. Here the mural construction is partially carried into the roof by brick arches, with nearly solid spandrels thrown across, in lieu of timber principals, and with, of course, a much more monumental effect. The corbels supporting the shafts from which these arches spring are, however, somewhat ungainly, and might have been brought further down on the wall, with constructive and artistic advantage. Messrs. Ordish & Traylen's "Church of St. Paul, Leicester" (742), is worth remark as a boldly-treated exterior, shown in an effective Indian-influenced drawing. The straight, unbroken mass of masonry forming the main portion of the tower shows a feeling for breadth of effect; but the junction of tower and spire is less successful, and wanting in refinement, the quasi-turret with their tops scarcely clearing the base of the spire, are not at all satisfactory, and spoil an otherwise good design. Beyond these there is little in church architecture calling for special remark. Some admirable drawings there are certainly, such as Messrs. Banks & Barry's restoration of "Halseley Church, York" (772), and Mr. Passcoe's "Chancel of St. Andrew's, Farnham" (745), the latter showing his architect's usual solidity of design, and true sympathy with the best lines of Gothic work, and neither presenting anything beyond careful working out of well-known materials. Mr. Waterhouse's "St. Matthew's, Blackmoor" (792), is a picturesque design of an ordinary Early Decorated type (the tower very ordinary), and Mr. T. Bury, in his brick and stone church of "St. Barnabas, Cambridge" (799), narrowly escapes vulgarity in his imposition of massive and cabbage-like finials. Mr. Emerson's "Interior of Choir at Allhallows Cathedral," in course of erection (793), reminds us strongly of "Cork Cathedral," and exhibits no indication, practical or æsthetic, of having been considered with special reference to a hot climate. The same architect's "Chambers of Girgaon Church, Bombay" is an admirable little drawing of an interior, but the design belongs to what we will take leave to call the "stumpy-colonnade" school, of which we are tired.

Coming to civic or public buildings, Mr. Street sends his now well-known original composition drawing for the "Law Courts," the bird's-eye view of the whole group (758), and his later design for placing the building in the Masses Embankment. Viewing it simply as a design, and leaving out of question the site, we certainly prefer this, in general effect, to the earlier one. A far greater repose and length of unbroken line would indeed have been our choice for a long river front, but no one can deny to this design a charm and picturesque of foreground (if we may so speak), rarely surpassed in its way, and to which the mass of the central hall behind forms an effective and contrasting background. Two defects in it (waiving the main defect, as we consider

it, of breaking up the front into so many small portions) are the interposition towards the right, of the immense semicircular niche, which is not only out of keeping with the rest, being of the height of nearly four stories, completely outcloses the rest of the building; and, secondly, the nearly equal height of the principal tower and the two apses over the central hall. These latter are most picturesquely designed in themselves, but being totally distinct in design from the lower part, the height, and, especially, the latter in height, the eye is puzzled which to select as the principal and dominant object in the grouping. If it were not convenient to carry the tower higher, the apses should, we think, have been kept lower, and in subordination thereto. The same architect sends also two of the competition drawings of *parts* of the original design enlarged, showing the (inter alia) niches and statues of saints legged in the last we suppose. The contrast between design, which, whatever its faults, is artistic, and what is so so, could scarcely be better illustrated than by comparing with the drawings just mentioned the large view submitted in competition for the Bradford Town Hall, by Mr. Nevill (778). A hydrocephalous neck-tower, windows without design or grouping, and a huge central arch forming the principal entrance, with insufficient abundance, and with a pier bearing directly over its centre on the story above, are the main features of the design, which we may certainly congratulate Bradford on not having accepted. Messrs. Lockwood & Mawson's accepted design for the same building is represented by drawings 766, 767, and 768, the execution of which is so much admirable, though in a somewhat conventional style. Mr. Seddie's perspective view sent in for the same competition (778), shows a fine, free, sketched touch in indicating detail, and is a very pleasing design in the whole, all the better for the fact that its author has for once given way to uniformity a little, and commended to a front of which the two sides are symmetrical in the main. The treatment of the windows is very picturesque; but we do not like the rather solid front of the centre tower (the line of which rises only from the roof), immediately super-imposed upon the lighter array of windows and niches of the story beneath. His centre tower is, however, more pleasing than the machicolated and battlemented tower which Messrs. Brown & Mawson's design (766) presents. Messrs. Salomons & Jones's design for the "New Reform Club in Manchester," already illustrated in our pages, is somewhat out of appearance, as their designs unfortunately often are, the angle towers being corbelled over to an extent which rather surprises than pleases the eye, and despite the design of what repose it might otherwise have, which, so far truth, we would not have expected, a promised enlargement of the House of Commons (794) must not be passed over. The plan shows the superfluous space in what would be the over-large private lobby (the present "House" made available at the angles for secretary and ex-secretary of Treasury, post-office, and miscellaneous offices, as shown in the perspective view, looks somewhat dangerously large for any but strong-lunged speakers. There are also given of the new division-lobby and reading-room. The new House, it should be observed, is lighted from above through stained glass. Mr. Porter shows a regulation design (811) for the "Charing-cross Branch of the Union Bank," with the usual pilasters, console, and pilastered windows which seem prone to imitate. We would, in quiet and unobtrusive design, of "New County Buildings," for Alexandria (812), shows to our thinking one of the most original and best-considered designs in the room. This may be called Italian architecture, adapted to a certain extent to another climate and country, to a degree of Egyptian feeling being imparted to it by the square columns of a long verandah on the first floor, with a deep shadow which would be formed between them; the feature being on a small scale similar to Mr. Cobden's treatment of the west front of St. George's Hall, Liverpool, on a larger scale, but that the Egyptian colonnade wants the roof and the consequent deep shadow. Mr. Wild's treatment of a windows on each wing, set in the centre of a slight projecting break in brackets over the upper stone pane-roof on brackets over the upper window, is also very refined and pleasing. The one fault in the design is in the recessed gables in the frieze, a commonplace feature which we regret to see clever architects indulging in.

In domestic architecture, Mr. Edis shows us a very good little drawing of a "Mansion at Petersfield," built in brick, with square-headed mullioned windows with stone dressings; a thoroughly unpretentious and solid-looking little house; the buttresses and gable to the porch seem, however, unnecessarily heavy. A more important-looking design is Messrs. Salomons & Jones's drawing of a "Kenwood Tower, Highgate," in course of erection; a design combining dignity with a certain degree of picturesque quality, but rather wanting in unity of treatment; a form of cusped window-head characteristic of debased Gothic coming rather ill between quasi-classic pilasters and under a square head; the use of wooden barge-boards and stone copings to gables the same house appears to us also a want of keeping.

It is worth noting that Mr. Brooke, the owner of this house, now in progress, and an illustration of which we shall shortly publish, has purchased Mr. E. M. Ward's fine picture, "Judge Jeffreys and Richard Baxter," now in the Academy exhibition, and Mr. Frith's charming portrait of "Mrs. Bessy," a Princess Elisabeth in "Twelfth Age and Crown," the first for £1,500, the second for 350 guineas.

Mr. E. M. Barry's "Additions and Alterations to Thorpe Abbots, Norfolk," is interesting as recalling so much of his father's manner of dealing with these kind of commissions, in which he showed his abilities as much as in anything he did. Mr. Barry gives us a sketch of the house as at present, with several architectural features, he dominates it with a modification comes, throws out a bay in the centre of the garden front, and adds a tower with open arched upper story very much like some of those which Sir Chas. Barry added to some of the houses he took in hand to improve. We do not felicitate Mr. Barry so much in his Gothic "Villa near Egham" (803). It is a very without being picturesque, and the small house to which it is annexed by a semi-circular bay is not a happy feature. Mr. Norman Shaw's views of "Leyes Wood, Sussex" (763 and 779), are admirable specimens of the peculiar style in which he is a proficient, embodying so much of old English sentiment; a revival of the past which it is more lawful to indulge in a private country-house for the gratifying of a man's own taste, than in any public places. The drawings and as might be expected, capital specimens of pen-and-ink etching, but Mr. Shaw's long brick chimney-stacks are excessively ugly and indefensible, upon any but archaeological grounds. The same kind of interest attaches to Mr. David Brandon's large drawing of the Marquis of Camden's "Mansion at Bayham Abbey, Sussex" (806), a complete and careful reproduction of Elizabethan domestic architecture. But as we with the old style reproduce the old sentiment? Perhaps Mr. Brandon's client thinks so; at all events, the experiment has been well carried out so far as the architect is concerned. Mr. Trevellick's "Bank and Residence at Altrincham" is another of those fables of old times, in the shape of a veritable old English house in that "poet and pan" style, about the nomenclature of which we do not seem quite to agree just now. Mr. Edis's "New Warehouse, Bridge-road, City," is a very good bit of modern Gothic street architecture; the only thing in it that displeases the eye is the heavy pier above the first floor string, with a thinner and narrower pier under it, the latter being, no doubt, starved to ensure the ground-floor shop its orthodox area of plate glass. Mr. Edis should knock off the little rosettes on certain portions of the piers; small ornaments like these, projecting beyond the face of the masonry, and which require an additional thickness of stone to cut them from, are foreign to real masonic design. "Dobroyd Castle," by Mr. Gibson (766), which we illustrated some time since, is a powerful design, standing well in the midst of the landscape in which it is placed, and deserving much admiration and expression from the simple expedient of battering the walls of the ground-floor story; and Sir Digby Wyatt's (771) "House at Uckfield, Sussex," is what may be called an eminently sensible and quiet Gothic design. The "New Portion of the Chateau de Martinvale," by Mr. White, is a peculiar and characteristic design, consisting of rubble masonry, with ashlar dressings; the general design is of an Early Gothic type, but the architect has ventured to use some instead of pointed heads to the windows in the semicircular bay, with short intermediate shafts supporting the stone lintels; and, the constructive advantage in such a position being obvious, the effect is piquant, without appearing unmeaning.

Among smaller decorative details of domestic architecture, Mr. P. P. Cookerell contributes a design for a marble chimney-piece (814), in a French Renaissance style, and with large marble figures, not altogether satisfactory as to conception, though the execution of the whole is very good. Mr. Ker's "Chimney-piece and Buffet at Bearwood" (791) looks very good as a specimen of design in wood-carving, but is planned too high for proper inspection. Mr. Talbot gives us "Elevation of Dining-hall, showing Decoration and Fittings," which we are glad to see are less *bienné* in outline and idea than some other things of the same kind which this admirable draughtsman has turned out. Mr. Burgess, however, has some outdoor Mr. Talbot's in this illustration, "Design for the Decoration of the Winter and Summer Smoking-rooms at Cardiff Castle" (744 and 752), which are truly fearful and wonderful, with dragons indescribable disporting themselves on the walls; and surely, surely, Mr. Burgess, the colouring, the *tout ensemble*, is not the most harmonious in the world! Did some other hand, in a little fit of sarcasm, introduce the copying figures in Medieval costume? Certainly, none but "ye men of ye periods," could seem at ease in such rooms. Among drawings purely illustrative, we may mention "Interior of the Church of St. Gomar, Lierre, near Antwerp," by Mr. Chas. (747), as an example of fine architectural drawing not excluding effect; and Mr. George's "Transsept of Burgos Cathedral" (774), as an equally good specimen of picturesque effect, not excluding architecture. Mr. Spence sends "The Mosque of Kaibey, Cairo" (784), and Mr. Emerson a "View of the Taj-Mahal, Agra" (776), a very good and not unlaboured drawing, showing the white marble dome against an intensely blue sky, and in the archways the cool, greenish shadows peculiar to white marble in shade; it is a very effective sketch. Mr. Goodchild's "Restoration of the Palace in the Bath of Diocletian," as suggested by the late Professor Cookerell, is the most admirable specimen of purely architectural drawing—hard, precise, and finished, though not so pleasant to look at as many others in the room, owing to the prevailing red-brick tint and the not very interesting character (architecturally) of the design.

Taking the contents of the Architectural Gallery as a whole, the exhibition appears to us better than that of last year. In point of mere drawing there is little that is not admirable, and much that all young draughtsmen would do well to study. In point of design, the general impression left on us is, that there is too much mere archaeology; and that those designs which exhibit any marked individuality or novelty are mostly somewhat abnormal in character. In some instances almost grotesquely so; and that in not a few instances some of the time which has been bestowed on elaborate drawing and colouring (pleasant to look at when it is done, certainly) might have been better employed in the consideration and evolution of better or more original design and detail.

STAGE ARCHITECTURE.

COVENT GARDEN.

The production, at Covent Garden, on Tuesday night, for the second time, of Cherubini's grand tragic opera, "Medea," suggests a remark on the treatment of architectural features, especially of the classic order, on the stage. Stage architects almost invariably assume the columns of their classical buildings to a degree which robs the scene not only of its dignity, but even of its verisimilitude. This was the case with the scenes, otherwise very effective, of the first and second acts of "Medea," and another practical mistake is the spacing of the columns so wide, that no stone lintel could possibly carry from one to another. But in the case of the opera in question, the worst of the historical architecture was left to the architect, and that of a double nature. In the first place, we should scarcely have been presented, at the same period, and in the same neighbourhood, with full-blown and fully-developed Corinthian and Ionic capitals respectively, in two consecutive scenes; and the practice of fluting the column on the lower portion, and leaving the rest plain, is a corruption, and not a Greek feature at all. But the serious lapse with regard to archaeology was this, that the story of Medea belongs, if we affix it to any historic period, at all events to the very earliest Greek period; and with such a fable, so essentially old-world in its associations and nature as that of Jason, the finished and elegant

Ionic and Corinthian architecture of civilised Greece has no affinity, either historically or aesthetically. The one piece of architecture which harmonised with the story was the temple-front in the third act, with its short Doric columns of only four or five diameters in height, which at once carry us back to the period of early and undeveloped Greek architecture. Had all the architectural scenery been of this style, unity and probability would have been given to the whole, and the mind would have been carried back to the early "hercic" age to which the fable belongs. It is not to be objected that if the music and scenery are fine, we ought to be content with the *best ensemble* we can get for each consecutive scene of combination. Opera is not satisfactory unless all its constituents—music, dress, and scenery,—go to assist and support one another in feeling and in effect; and those who think otherwise may remind of the reply of Goethe on the subject, recorded by Eckermann,—"I cannot understand, my friends, this bit-by-bit enjoyment of yours. How can you be really enjoying yourselves through the ear, when the equally powerful sense of sight is offended by an incongruous spectacle?" It is just this sense of congruity which English theatrical audiences are so deficient in, and to which they should be educated.

We ought scarcely to mention this performance at all without a word of recognition for Mlle. Tiliens's splendid presentation of the arches part of *Medea*, part to the adequate execution of which she alone, perhaps, of living soprano singers, is physically equal, and her conception of which artistically was almost all that could be wished. Dr. Guss, as Jason, also showed himself a thorough and painstaking artist, achieving a noteworthy success with less of natural advantages of voice to aid him than are enjoyed by those tenor singers of brilliant reputation, but of inferior æsthetic perception and cultivation.

THE FALLEN ARCH AT BLACKFRIARS.

The attention with which not only our habitua readers, but, thanks to the courtesy of the *mes* industrial of our daily contemporaries, the great bulk of the reading public, have followed our investigations of some of the most important engineering questions that have lately assumed prominence, has made us feel it to be proper to pay an early visit to the scene of the recent collapse at Blackfriars. We are chary as to the use of the word "accident." In any disaster of the kind, the first thing to ascertain is whether it really comes under the category of unavoidable mischance or not.

The accounts which were given on the 30th ult. of this fall were, in our view, far from intelligible. Every one in any way familiar with building is aware of the difference between a tunnel and a bridge. For any English engineer, at the present day, to attempt to tunnel through "made earth," or to construct a brick arch, with a tunnel section, under or under such material, would be a folly of which we hope no persons intrusted with the control of any of our public works are capable. Yet no other explanation seemed consistent with the first reports of the disaster.

The account of the inquest on Patrick Hearne, held on the 2nd inst., does not throw very much light on the matter. The Manager of the Metropolitan District Water-works deserves honourable mention for the straightforward candour and courage with which he stated, as to the unequal weighting of the arch,—speaking after the event, if any one is to blame, I am. One gentleman, who writes the letters C.E. after his name, "could not state the cause of the accident." Another "thought the accident was an exceptional case, and that the arches had been constructed and treated in the same way, and not one of them had given way." At a time when it is beginning to be admitted on all hands that education is a necessity, it is lamentable to see any member of a liberal profession treating a simple statical question as an inexplicable mystery. The engineer of the company seems to have confirmed his evidence to a contradiction of the statement of some of the men had refused to work, from an instinctive sense of danger.

The site of the arch in question is in the small interval existing, on the line of the underground railway, between the new Blackfriars-road Bridge and the Railway Bridge that crosses the Thames immediately below. The tunnel for the low

level railway has already been driven under the Blackfriars-road. The station for this river-side line is rapidly rising immediately under the Railway Bridge. Wrought-iron girders, about 6 ft. 4 in. deep, of some novelty of detail in their construction, form the roofing of the line at the station. But between the face of the ordinary section of tunnel under the road, and the commencement of the station, occurs a length of some three bays of brickwork, of the full width required for the station, which have been covered by a brick arch instead of by the girders and jack arches which they carry,—a very unfortunate piece of economy.

The spot of this brick, judging from piling over very rough ground, is about 46 ft.; the vertical line some 11 ft. 6 in. The brickwork is awkward, in six half-brick rings, which are increased to eight half-brick rings on the haunches of the segment. The accounts given of the piling of material on the arch are absolutely erroneous. Over the crown there is only about a foot of what looks more like clay puddle than anything else. Over the haunches, and, so far as the removal of material displays the section, behind the abutments, and beyond the haunches of the arch, is made ground of a very "rubbishy" description.

Now, reverting to what we before said as to the difference between the section proper for a tunnel and that fitted for a bridge, we are fully aware that, in this country, the rule of practice for our railway works has not been to make our bridges perfect as masonry structures, or, in other words, so to construct them that they would stand alone. The great works of our masters in engineering, the Romans, were so constructed. For that reason the *Cloaca Maxima*, 2,500 years old, is now standing. We have been guided by the principles of an economy of construction, in the long run, prove a sound one; and have made the stability of our arch-bridges depend in great measure upon their earthwork backing.

In bridges with abutments in the solid earth, as in those over railway cuttings, this mode of structure may be perfectly safe, as, in every instance, the earth has to bear the weight of the arch; or, when the earth is undisturbed, and is not likely to be disturbed, it may be relied on to bear the thrust of the arch.

But with bridges under embankments the case is different. The stability of these structures may be perfectly safe, as, in every instance, the earth has to bear the weight of the arch; or, when the earth is undisturbed, and is not likely to be disturbed, it may be relied on to bear the thrust of the arch. Hence, in point of fact, a much larger number of them than engineers cared to report in half-yearly meetings fell down. It will be fresh in the remembrance of those who survived out of the largest engineering staff in England thirty-five years ago, how intelligence came one morning to an office, which was then in the country, but is now in London (owing to the growth of the metropolis), of the fall of "another bridge." Every eye was directed to one of the subs (he is a great man now), who seemed, however, quite unconcerned. "So-and-so,"—at last came the attack,—"that must be another of your bridges." "Oh, no!" "But it must be." "No, it is not." "What will you wager?" "My dear fellow, I should only be robbing you—my last bridge fell down last week." This is a literal fact.

Now it is evident that when, in the drawings that form the record of existing and of former works, it is impossible to represent certain elements of stability, the value of the experience derivable from such drawings is impaired. No drawing can show the amount of punning actually given to backing. No drawing can give any satisfactory detail of the earthen backing of a bridge. The masonry is distinct enough. As matter of calculation it may be evident that it would not stand as an independent structure. The *winch* quantity has to be made up by the resistance of the earth backing, partly dependent on its weight and partly on the mode in which it is artificially consolidated,—that is to say, the stability of the bridge depends, after all, on the rule of thumb.

It is this rule of thumb alone which admits of "accidents which are exceptional." In the present case the material of the backing, as far as we could judge from personal investigation, was not of a nature that any amount of ordinary punning could have properly consolidated. Again, speaking, as we before explained, not from examination of the drawings, but from experience given by the engineer, but from careful study of all that met the eye, the brickwork was hardly of a

section to which we should have considered it safe to trust. The abutment-walls should at least have been carried up to the level of the soffit of the crown of the arch, either as a solid spandrel, or as a spandrel-wall with cross arches, which even the loading line of the arch might be indicated to be proper. Had less been said to the questionable existence of the earthwork backing, we should not have been reduced to the dilemma of extreme instability of equilibrium in structural design, or of great negligence in the unequal weighting of a skew arch, as matter of execution. A little more statistical precaution and great less trust would be in rule of thumb, and such an "accident" as that which proved fatal to Patrick Heane would have been rendered, as it ought to have been rendered, impossible.

We observe that, in the busy eastward extension of the works of this subterranean line, the chain-pump is merely at work. We also observed, on passing under the river front of Somerset House, the large iron washers, disfiguring Sir W. Chambers's fine sash, which terminate the bolts by which that noble building is now tied and bound together, in the hope of preventing a second edition of the catastrophe that befell the dining-room of King's College. We beg to call the attention of the Very Rev. the Dean of St. Paul's, or of the architect to the chapter, or of the responsible person, whoever he may be, to these points. We do not say there is danger; but we do say that there is extreme need of watchfulness. The engine that moved the entire river front of Somerset House, as far as all events as the terrace is concerned, is drawing nearer and nearer to our noble metropolitan cathedral. Dean Beckland's recently cited remark to the workman on a sewer,—"a vastly unimportant matter in comparison to an great metropolitan tunnel, must not be forgotten. 'Pumping water! You mean pulling down St. Paul's!'" We are not aware whether the now head of the cathedral chapter possesses the geological knowledge of his lamented brother dean, or the loving care for the fabric entrusted to his care of which the (happy) living historian of Westminster Abbey gives such constant proofs. But in any case his anxiety for the stability of the fabric committed to his responsibility must be susceptible of excitement. We wish to call attention to the former remark on this head,—to the admiral's confirmation of their truth given by the King's College catastrophe,—to the fact that the activity of these powerful pumps is now directed towards spots that will soon lie in a direct line between St. Paul's and the river,—and to the circumstance that a serious "exceptional" event, such as occurred at the eastward of Blackfriars Bridge. Clearly the Metropolitan Railway cannot be left to borrow its own course in its own way, unwatched by any independent engineering authority, if we are to sleep soundly without dreaming of St. Paul's.

Messrs. Bateman & Révy, in a letter which we had pleasure in publishing, as it so implicitly, if not explicitly, confirmed our remarks as to their scheme, came at last to the forlorn argument that if anybody should blow up their submarine tube, France and England would make this aggressor pay for it! Perhaps the Dean and Chapter of St. Paul's might have the same moral claim against the Metropolitan Railway Company, in case of any damage to the cathedral. For ourselves, not being lawyers, we hold that prevention is better than cure, and we shall think that the catastrophe of the 30th inst. is not without some compensation, if it lead to a careful and adequate investigation of the possible effects of the works now in progress east of Blackfriars Bridge upon the stability of St. Paul's Cathedral.

A Crystal Palace for New York.—The Bill incorporating the Industrial Exhibition Company, which was organised in this city to erect a permanent Crystal Palace, has passed the Assembly, and, having already passed the Senate, on request the governor's signature is become a law. The project is one of great magnitude, and as the capital—seven millions—is said to be already paid up, promises to be brought rapidly to completion. We understand that the building is to be a permanent one, and after the exhibition is over will be devoted to the use of a conservatory, botanical and zoological gardens, and to the general education of the masses.

THE SOCIETY OF ARTS CONVERSAZIONE.

The managers of South Kensington Museum will entirely lose the confidence of the public in any power they may possess of providing for the reception of a large number of visitors, if they allow a repetition of the inconveniences inflicted on their guests on the 4th of May. If on any plea it can be urged that the arrangements were not discovered, it can only be shown that there were no arrangements at all. The doors were simply opened to a sufficient number of persons, provided with tickets, to fill the courts. The cloak-room was a positive menagerie, only to be approached by a fight, and only to be left by a still more severe fight. It was not only unsuccessful, but resorted to only to insure the utmost amount of struggle; and we have no doubt that minor personal inconveniences, sprains, and bruises, were many.

The royal visitors walked through the courts, and were thus visible to those of the visitors who immediately flung their sticks. But the seats in the tribune set apart for their reception were so arranged, contrary to all precedent and to all expectation, as to render the occupants entirely invisible to the large number of persons who had come for the express purpose of being able to look at the pleasant features of her Royal Highness the Princess of Wales's momentary glimpse of a head was all that these expectant guests obtained. The disappointment was general and intense. There came the renewed fight for the cloak-room door, and how the six or seven thousand guests got home is more than we can say.

THE THIRTY-SIXTH EXHIBITION OF THE INSTITUTE OF PAINTERS IN WATER COLOURS.

A critical notice of the Exhibition of the "Institute of Painters" in Water Colours must, in the present season at all events, bear a strong family likeness to a notice of the Exhibition of the "Society of Painters" in Water Colours. Country visitors, and, still more pathetically, foreign visitors, helplessly ask what is the difference between a Society and an Institute? In the absence of either any definite reply to that natural question, or of any marked distinction between the two bodies, we are obliged to look between the collections in the two galleries, we must content ourselves with the satisfactory reflection that the division of the water-colour drawings which solicit the public approval during the ensuing month or two, into two galleries—one containing, as we showed last week, 261 pictures, and the other, on which we have now a word or two to say, 283,—is much more favourable to the interests of the artists, as well as more agreeable to the visitor, than the crowding together of 500 works of art on the same spot. In fact, it is much more satisfactory to be obliged to devote separate visits to an adequate number of pictures, than to run the risk of having the visual nerves fatigued, or to have to make the heroic resolution to stop at No. 250 to-day, and recommence with No. 251 to-morrow.

There is another respect in which we think a reform might be instituted with advantage to all parties. The number of pictures which any artist is allowed to exhibit ought to be curtailed, and definitively fixed. In this respect the "Institute" is no less a sinner than the "Society." The latter body displays on its walls eleven pictures by one artist, twelve by another, sixteen by each of two others, and no less than twenty by a fifth. The "Institute," to say nothing of those who send five or six drawings, admits seven from each of seven artists, eight from four, nine from three, and thirteen from two. We are content with this a miser. However great a gift facility of production may be, and actually is, the slight-hand which produces it is a quality different from, even if not inconsistent with, those excellences for which we purchase a picture. We think, for instance, that the pencil-mark of admiration which we find against Mr. J. L. Moore's "Wren's Mill at Chagford, Devon" (No. 156), would have been elicited by other productions of his pencil, had they been fewer than a dozen.

One of the first points that strike the reflection on a visit to most of our galleries is, how rare it is for an artist to take the trouble of considering what picture ought to be exhibited, before he begins to draw. In selection, not only of the object, but of the best mode of putting that

object on the canvas, lies one main secret of the painter's art. It is that same instinct which is also a chief requisite for the success of the photographer—the true art-conception of form, and of the appropriate method of isolating the chosen form from others, without harsh or artificial severance. We can contrast in this particular the drawings of two artists in the present gallery. We are not disposed to undervalue the skill and taste of Mr. Skinner Proust. He handles a truthful pencil. He selects picturesque or otherwise striking scenes, and represents them with fidelity, and often with a very happy effect. Look at his "Chertsey" (187), his "Roses" (372), his richly-coloured and faithful "St. Nicholas, Ghent," with the busy commercial life of the most Romanist city in Europe,—the ancient town that still stands its municipal papers S.P.Q.G.—the senate and people of Ghent,—with all the stir and chatter going on under those wonderful umbrellas boughs in the street. Each of these is good,—but it is only as a good "bit." You see no reason why either picture should include so much and no more. It might be almost indefinitely increased, or perhaps reduced, in size, and yet be neither more nor less of a picture than it is. It is like a set of numerals written down, correctly, indeed, but by chance—not a round number, or any other number, that tells of its own individuality.

This object is still more strikingly exhibited in such instances as Mr. Chase's "Entrance to the Chapter-house, Furness Abbey" (42), and his richly decorated interior of "Roslyn Chapel, sketched previously to its Restoration" (173). In these and similar pictures the artistic arrangement is positively nil. As far as the paper goes it is covered, and very well covered, with good representation of architecture of great interest and beauty. But whether the number of square inches before us have been cut out of a larger picture, or why, if otherwise, that bit, and no other bit, of the building should have been portrayed upon them, appears a mere matter of chance. The bit of work is good, but it is not a picture.

In contrast to this mode of cutting out a part of a landscape as if with a pair of scissors (which finds especial favour with the painters of beech woods), let us look at Mr. B. Green's "Remains of Walsingham Priory, Norfolk" (140), his "Remains of the Convent of the Grey Friars, Lynn, Norfolk" (146); his "Caistor Castle, Great Yarmouth," or his beautiful ruin of "Greyfriars, Norfolk" (207), with its Norman west front cut into, as it is called in the very similar facade of Rochester Cathedral, to admit of the insertion of a much later pointed arch. In each of these drawings, to which others may be added, there is the first element of a good picture. Not only is there a well-selected object, but this object is so treated, with reference to the mode of representation at the disposal of the artist, as to make a good picture, to lay hold on the mind by its individuality. Enlarge or diminish the surrounding landscape, and you injure the effect of the drawing, independently of balance of colour. Sketch the scene in pen-and-ink on a sheet of letter-paper, preserving the same proportions of area and of object, and you have an artistic sketch. It may be a design not of the highest order; to what it represents, only a ballad in water-colours; but such a ballad is far more contenting to the mind than a line or two cut out of an epic such as "Roslyn Chapel."

Justice to other demands on our columns involves positive injustice to many of the artists whose works will be regarded with much pleasure by the visitors to the Institute. Here, as we think in every exhibition this year, the level is more closely kept,—we do not mean a paltry level,—than perhaps has previously been the case. If artists were to be classed by marks, like students at a competitive examination, the average number of marks would show an increase on former seasons, with fewer exceptionally high numbers, and many fewer very low ones. In many cases we have some fine work to look for, for instance, at "The Carrara Mountains from Spezia" (143), by C. Yacher, lost in a misty purple haze. A still deeper veil of the same southern tint is cast over the "Evening on the Nile" (108), by the same artist, with its weird details of Saracenic architecture cutting on the sky. The distant mountains in the view of the "Lago di Garda" (30) form another lovely scene, complete picture, not a mere scrap of landscape. The view from "The Arab Tombs Desert, South of Cairo," the Pyramids of Memphis

in the distance," for the contrast of life and of repose, of bright colour in the stirring bustle of the Arabs, and misty harmony in the far expanse of the eternal desert, grey with the more than "forty centuries" that brood over the Pyramids, is very fine. "The School at Thebes, Egypt" (169), by Carl Werner, with fiercer colour than the views we have referred to, is a perfect miracle in its mere depiction of stone work. Mr. John Abelson's bright sketch of "Sir Roger de Coverley" (317), almost diametric criticism by the pleasant sentiment of the good old country scene, and the glow which lights up the old-fashioned ball-room, which is, however, far brighter than the three chandeliers, aided by the fire, could have produced. If part of the time spent on the other eight contributions of this artist had been devoted to a higher finish of this pretty sketch, it might have been better for everybody.

We can only add, from among a number of other marked pictures, word as to Mr. Augustus Bovier's "Garland Makers" (79). The scene, the arrangement, the black background, are evidently taken from Pompeii. The three lovely girls, in their tender bit and peach-coloured dresses, are not, however, Campanian, but French,—French with the marks of English culture on the mouth. Nothing is more striking to a connoisseur, on return from a long stay abroad, the indescribable effect of the grace given as a general rule by the outlines of the lips of educated English women; it is a charm peculiar to our island. Mr. Bovier's larger picture, marked perhaps rather more by classical sentimentality than by classic sentiment, is also pleasing; but we confess, in spite of criticism, to such a lingering partiality for "Garland Makers" as to wish to leave the Gallery with their pretty faces and figures fresh on the memory.

PAROCHIAL ASSESSMENTS.*

Mode of Valuing Property liable to be Rated.
There are two estimates required by the statute of 7 Wm. IV., c. 96, which regulates parochial assessments, viz., "gross estimated rental" and "rateable value."

The former is the rent at which the property might reasonably be expected to let from year to year, and is to be ascertained by the rates and taxes and tithe commutation rent-charge (if any), the landlord bearing the cost of repairs and insurance and other expenses (if any) necessary to maintain the premises in a state to command such rent. The rateable value is so much of the gross estimated rental as remains after deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses which the tenant is in a state to command such rent, as aforesaid.

The actual words of the statute are very simple when understood; but, it is probable that no words in any statute were ever more misunderstood, or ever caused more confusion and gave more trouble than they did. They are as follows:—

No rate for the relief of the poor in England and Wales shall be allowed by any justices, or be of any force, which shall not be made upon an estimate of the net annual value of the several hereditaments rated thereunto; that is to say, of the rent at which the same might reasonably be expected to let from year to year, free of all tenants' rates and taxes and tithe commutation rent-charge (if any), and deducting therefrom the probable average annual cost of the repairs, insurance, and other expenses (if any) necessary to maintain them in a state to command such rent."

Soon after the passing of this statute, viz., on the 3rd of March, 1837, the Poor-law Commissioners issued a circular defining gross rent as the rent which would be paid to a landlord who himself undertakes to pay all the usual tenants' rates and taxes with which the hereditaments or premises rented by the tenant are chargeable, together with tithe commutation rent-charge, the expense of upholding the buildings in tenable repair, insurance against loss by fire, and any other expenses, if any shall exist, necessary to maintain such hereditaments in a state to command such gross rent. Net rent they defined as the amount which is received by or which remains clear in the hands of a landlord after all such taxes, charges, and expenses, as are above enumerated, shall have been provided for.

Acting upon these definitions, many surveyors included in their estimates of gross estimated rental the whole of the rates and taxes usually paid by the tenant. For example, in the case of a house worth 100*l.* per annum to a yearly tenant, the rates and taxes upon which amounted to 20*l.* per annum, and the average cost of insuring, repairing, and maintaining the property 20*l.* per annum, they called the gross estimated rental 120*l.*, the rateable value 80*l.*

So far as regards the mere payment of poor rates no injustice was done to the ratepayer; but, in the case of other uses made of the gross estimated rental, it became apparent that the intentions of the Legislature had been misunderstood; moreover, valuations so made seemed to estimate the value of property in a parish unfairly and unreasonably high. It very early became the practice to disregard the instructions of the Poor Law Commissioners, and to omit all consideration of rates and taxes in making valuations; and, in 1859, the Poor Law Commissioners were advised by the then law officers of the Crown (Sir Fitzroy Kelly and Sir Hugh Cairns) that the term "gross estimated rent" meant the rent at which the property might be expected to let, the tenant taking the burden of rates and taxes and tithes upon himself. In other words, they were of opinion that the word "free" in the statute must be considered as referring to rent and not to hereditaments.

An attempt was made in the Union Assessment Committee Act, 1862, to remove the doubts which had existed; but without much success, so far as ordinary ability can comprehend it. Nevertheless, the opinion of the law officers in 1859 is now universally acted upon and generally understood.

It must always be borne in mind that the rateable value is not the actual rent at which a property may be let; but that rent at which, after taking all things into consideration, it might reasonably be expected to let. Moreover, it must be remembered that the circumstances to be taken into consideration in estimating the value must always have reference to the period at which the valuation is made.

A house which, on the completion of a railway or some other public improvement, will be worth 100*l.* a year, may, at the present time, be worth only 50*l.* a year. While it is worth 50*l.* it must be assessed at that sum only; but, as soon as the improvement takes place, the assessment must follow the increased value. Again, the rent received in a lease may not be evidence of rateable value. A property may possess a gradually increasing value, extending over many years. A lessee, in agreeing to pay a fixed constant rent, would average these circumstances. The rate must be made on an estimate of the annual value from time to time; low, when that value is small, and higher as it increases. Again, property may, from unforeseen circumstances, increase or decrease in value during a year. It is not, therefore, if it should increase, it would be unfair to the other ratepayers, who might not be similar lessees, if the assessment upon it were not increased; and, if it should decrease in value, it would be unfair to the lessee not to decrease the assessment. The term from year to year must not be misunderstood, as it sometimes is. It does not mean a letting for a year only, nor a letting on a yearly tenancy; but it means that changeable circumstances must be taken into account from year to year as they arise.

Valuation of Agricultural and Accommodation Lands.—In addressing the Institution of Surveyors, it is quite unnecessary to attempt to explain the mode of valuing agricultural or accommodation land. Nevertheless, it is well to again point out that the rateable value is not the rent actually paid either on a yearly tenancy or on a lease; but, that it is the rent which, all things considered, a tenant might be reasonably expected to pay for the year next following the making of the valuation. The late Lord Denman, whose judgments were always as clear as it is possible for judgments to be, in delivering judgment in the case of a brickfield appeal, said:—"It may well be the although at the end of the year the lessee has made so many bricks that he can afford to pay 150*l.* in royalty to his landlord, yet he could not prudently at the beginning of the year, contract, at all events, to pay more than 100*l.*, and if so the latter rather than the former will be the sum at which the land may reasonably be expected to let from year to year."

So, in the case of accommodation lands, a piece of meadow land may be situated in the middle of another estate and in front of the

* By Mr. Edward Hyds. See p. 341, *ante*.

buildings is familiar to all who take an interest in archæology, and the Palais de Justice forms an exception to this general rule. In order, however, to appreciate the enormous difference of level between the present surface of the ground and what it was at the time the first buildings on the site of the Palais were commenced, it is necessary to place oneself below the level of the *terre-plein* of the Pont Neuf, on which stands the statue of Henry IV., in order to estimate the height of the quays and the elevation of the ground above the low water-mark of the Seine.

As the superstructure of the Palace of Philippe Augustus and Saint-Louis was raised on the remains of buildings of the Roman era, the foundations of this edifice were below the level of the river, and the ground-line was level with the shore. In spite, however, of the ravages of fire and the numerous repairs and alterations which from time to time have been executed to the building, the ancient ground-floor has, thanks to the raising of the ground all around, been preserved in a remarkable manner, and now forms a kind of basement under a portion of the palace, and is in very good preservation.

If, in passing by the quay which runs on the left of the Conciergerie, you look through one of the small square windows, which are placed almost upon the ground, you perceive a kind of crypt, supported upon columns with semi-circular capitals. This is the basement story of the famous *Salle des Pas Perdus*, and is all that remains of the original building. The *Salle des Pas Perdus* having been destroyed by fire in 1618, was rebuilt by Louis XIII., under the direction of the architect Jacques Desbrosses, who, as was the fashion in those days, instead of attempting to restore the ancient features of the palace swept the whole of the upper part away, and carried out the rebuilding in the Italian style. The basement having escaped the fire, was not rebuilt, and remains almost intact. By the side of the Quai de l'Horloge is a vaulted room, about 53 ft. square, the roof carried by nine columns, with four enormous fireplaces, nearly 15 ft. wide; one at each angle. This chamber is popularly called St. Louis's Kitchen, and belongs probably to the end of the thirteenth or the beginning of the fourteenth century. The arch over the chimney openings forms an obtuse angle on plan, and the key-stone is striated in a very curious manner against a column in front. A plan and perspective view of this building are given in *Violet-le-Duc's Dictionary*, pp. 476-7. Le Duc believes that this kitchen had originally two stories, the lower story,—that which has been preserved,—serving for the retainers, and the upper one for the king's table.

To the right of the Conciergerie some buildings of a Gothic character are now going on, which are intended to connect the *tour Montgenery* with the *tour Bon-Bec*, which latter has been entirely re-modelled. In carrying out these new ancient buildings of the time of St. Louis surrounding the courtyard of the Conciergerie, formerly used as cells for prisoners, have been respected.

In this courtyard are the dungeons of the unhappy Marie-Antoinette and the celebrated *salle des Girondins*, the interiors of which have been carefully preserved. The outside casing has, however, undergone some modifications, as well as the lower courses of the front next the quay, as far as the *tour de l'Horloge*.

The height of the Church of Notre Dame de Paris has been lately ascertained, and an inscription recording it has been engraved upon a metal plate fixed at the north-west angle of the building, about 3 ft. from the ground. The following is the height above the mean level of the sea, 35 m. 99 in. (117 ft. 9 in. 425 in.); height above the level of the Pont des Tournelles, 9 m. 74 c. (31 ft. 10 in. 51 in.); height above the datum level of the capital, 65 m. 50 c. (214 ft. 4 in. 363 in.).

As a point of comparison, it may be mentioned that the top of the spire of Strasbourg Cathedral is 141 m. (462 ft. 8 in. 877 in.) high from the ground. The distance on the route *impériale*, which were constructed, for the most part, during the long reign of Louis XV., are all computed from the west door of the Church of Notre Dame. A column of bronze gilt, similar to those employed by the Romans in their forums for a similar purpose, is about to be erected in front of the doorway at the actual point from which these measurements are taken.

Appropos of marking the houses inhabited by

distinguished men, the Municipal Council of Micon have determined to affix a black marble commemorative tablet on the front of the house in the Rue des Ursulines, in which Lamarine was born in 1790.

SOCIAL ASSOCIATION.

THURTEEN lurk in the breast of every man some ambitious longings. They may be silent, they may be trumpet-tongued; his goal may be as reaching, it may be might have to stir hope, avoid cruens, but he still bears onward, through sometimes driven from his path. We, I take it, have ambition—I hope noble; we have been toiling, may be silently, for many a year, driven to many a shift, crushed, dispirited almost, but still unsubdued. We could exert upon the margin of any swamp, we could remain inert at the brink of any precipice; but our reason would be uncomplaisant. We must still on to stop is to recede, for the world moves forward; a step not taken is a step irrevocably lost. Such is the journey of life. In this journey we often require assistance, advice, a cheerful word; but fellowship, good fellowship, is that which smoothes the road and diminishes its hills. Social intercourse is a vast stimulus. We are borne on our way easily and without effort if we have good companions; with those we live, we do not simply exist. We travellers, therefore, having met upon the road, fall into conversation. We fear, from what each says, that a vast deal of existence has been done and is doing. The pathway being difficult, may I say dangerous, is uninviting to a solitary traveller. He fears he can make little or no way. One has lost his chart, one has compass, one has weapons, one has cash; but between them they can muster all the necessities of travel. So long, therefore, as they are bound in the same direction, they determine to lend each other aid and enliven the journey by sociability and brotherhood. Along this paper, as along the journey, I am continually falling—into metaphor. But in all societies these bandings together are continually occurring, under different names, for very different purposes.

A good answer to the cowardly query of what is the use of living, since we are so ephemeral,—since we cannot live longer,—is this, that if we lived to a million we should still be as far off eternal existence here on earth as now, and at the end of the million we should wonder at the shortness of this "transitory life." But, in the words of a deep thinker, "Why should the present race of mortals monopolize the blessings of existence, after they have had their share in the business, the enjoyments, the miseries of life. Is it not reasonable that they should be removed from the stage, to give place to others who may taste the same pleasures?" In so far as the wisdom and goodness of the Almighty are concerned, the attributes we so constantly affirm are more conspicuously displayed by his giving life to these countless millions of animated beings than if the blessings of life were confined to the existing generation of men and animals.

As things are at present ordained, by the wisdom of the Almighty, countless myriads of creatures appear in succession to taste the blessings of existence, or to celebrate their Maker's praise.

Nay, the dispensation of death, which we so generally deplore, furnishes scope for some of the purest pleasures which man can experience here below; for the constant waste of the species is supplied by children born in our own image, in whose happiness we are deeply interested, whom we view as our representatives to other generations, and in whom our lives are so bound up that death can scarcely appear even a natural evil, when we have transmitted, as it were, our existence and our comforts to others, whom we love as our own souls.

Take time by the forelock in all things; never let go your hold, hang on like grim death itself; for, once you relax your grip of that grizzled bit of hair, hundreds of ready hands are there on the instant to take your place. Alas for that man whose heart is willing, but whose flesh is weak! He retains his hold, may be; he feels, drop by drop, his strength ebbing from him; but a rude jostle, a sigh, and the poor struggler drops behind, and is for ever lost sight of and forgotten. But stop; see, there is a strong arm stretched forth, the fainting man is supported, a cheerful voice advises courage, words of hope are spoken, temporary assistance rendered, and the worn and drooping traveller recovers

strength and spirit. His preserver lives two lives instead of one; the good and ready deed of his has not only been the means of preserving to the world a fellow-creature, but he has gained confidence in himself, and, let us hope, a willing ally.

All men are pretty well ballasted with the cares of this life; many can hardly keep afloat; any legitimate means can be used for the lightening of these storm-tossed backs the better. Oftentimes, when these means are effective, most extraordinary phenomena occur. We will suppose a witty lecturer exerting his influence upon these craft; he need not have been at work long before the wistful of life, as well as the serious; one vessel bows up against another; this one pitches and rolls, as if not a grain of care were aboard to steady her, and the whole fleet present looks like a mass of rolling, rollicking porpoises, who care neither for wind nor tide, and whose hulls are so light as to have little immersed in the waters. Now, this lightening of the cares of this life invariably takes place when numbers do congregate for the purpose of friendly intercourse, for mutual amusement; all such meetings ought, therefore, to be encouraged. It is by intercourse with each other that ideas are exchanged, creeds propagated; anything which tends to discountenance these gatherings is an evil to be eradicated. Man is, above all the animals, sociable; and it is in company that he fully indulges in that one attribute which he possesses exclusively, so it is said,—laughter. It is in mixing with others that he can show his generosity, indulge his hospitality, prove his valour, exhibit his sympathy, exercise his charity; not one of which he can do locked in a place by himself. That man who is in such a position as to be debarré this intercourse with his fellows, has but a sorry existence; he is a well out of gear in the machinery of hopes, longings, finding no healthy outlet, as he daggers turned against his own breast. He is stabbed to the heart, and although no wound may be visible, the internal hemorrhage may be none the less fatal. How soon such a one's mind is apt to become morbid; and instead of putting forth green and vigorous shoots of knowledge, grows only rank and worthless weeds of distrust and discontent. How gloomily does he view life and its surroundings; with what regret does he look to the past, with what hopeless despair does he look to the future. Hope is the great mainspring of action—"Dum spiro spero."

Life, however one may look at it, is always shifting, no matter whether we view certain phases of it in the cottage or the palace, in the metropolis or in the village. As the seasons alternate, as the waters of the ocean ebb and flow, as the pulse of man throbs, as the rivers of his blood alternately swell through his veins and thence into his heart, to be again propelled through the ramifications of his system of arteries, so does the apparent life of society ebb and flow; and, to carry out the great laws of nature, it should be so. In the midst of this great social agitation takes place: something has to be remedied, something taught. New local government is at fault, great Bumblebee has achieved something so outrageous that society cannot possibly shut its eyes to the blunder. Local government has to be governed, societies are started, meetings held, and a vast amount of talking done. Whether from the misdeeds of Bumblebee having been wiped out, or from love of change, a new subject is soon started, and people exclaim, "Ah! I said it wouldn't last; I knew the matter would take a natural death." Leaving all to imagine the subject ought to have been murdered, or have had a perennial existence.

Bumblebee might not be in disrepute, but our greatest blemish, the working of the might. He might have exhibited a depth of ignorance and depravity so unfashionable as to appal the stoutest heart. Society sets about reforming him in the most agreeable manner. He has had mechanics' institutes, he has had schools provided for his children, he has had Paradise set before him if he would only stretch forth his hand to take it; but we discover we have been doing him with too heavy food; his stomach is not fit for such rich viands as we have in our good-natured ignorance put before him; he must be looked upon as some shipwrecked mariner who has been for months without sufficient nourishment, often without any,—he must therefore be treated accordingly. His diet must be of the lightest kind, and given just when the system is capable of digesting it. The treatment is no longer prescribed, but your good-natured public carries it out to the letter; and, like the tale in

the "Arabian Nights' Tales," the cork is no sooner out of the vessel, than the whole place is filled with the good or evil genii. The public, whom I will call the Fishermen, are soon appalled by the magnitude of the giant he has let free, he fills every place, and threatens at no distant time to swamp, or, in other words, clear the Fisherman off the face of the earth. After some little talk, this grand agent is induced to get into the bottle again, and then your B. P. or P. F. (poor Fishman) escapes the sea, in, and the danger is passed for the time. Now this formidable affair, which the P. F. might have let out of the bottle, may be "lectures for the working man," "working men's societies," "six-penny benefit societies," or "penny readings." Such things come regularly on the scene of social life, and all tend to a good end. Oftentimes in a small place, when the working man has taken up his share of attention, has been fêted and feasted mentally, the donors of the feast are sometimes induced to look upon themselves, and to discover that they are capable of improvement; may I say any example. It springs a debating society, an orphonic club, a didactic society, a beef-steak club, or a whist club; all serve a purpose,—they serve to make life long and to lighten existence. For the class of ne'er-do-weels, or grumpers, to say that because such things have but an ephemeral existence, they answer no purpose, is to prove that they have not thought over the matter. All these movements are good in themselves, and show a healthy tone in society. Some movement or other in a small place is absolutely necessary, both for the physical and mental health of many. Without some such incentive to action the mind and body both become rusty; and although directly all such movements may not be philanthropic, they must by no means be condemned on that account. Indirectly they may be the source of much good. The way to keep our unions empty, and to turn our goals into storehouses, is to teach health of body, and to put the poor man in the way of obtaining and keeping it. It is from our over-crowded, pest-ridden, fever-stricken dens that a seething army of criminals is belched forth. Sickness brings want, breeds ignorance, fosters crime. Your strong, healthy, hale man never turns foot-pool or pickpocket: it is the scrofulous half-fed, spiritless coward who flichs and robs; and his children,—for children are born to such,—not only inherit the sins of the father, but his diseases also. Man, I take it, is not naturally vicious; his vices are taught, and come, give him health and strength, he will get his living honestly. Any one to live, as I understand it, must have health; and at the present day the laws which govern this greatest blessing are so well known as to render any one unpalatable who neglects them. The man who has confined himself but to worry and annoy himself, or, to use a phrase, "to be a nuisance for his work-a-day life," he is incapable of performing those duties which should devolve upon him; he becomes something less and something more than a cypher. As Longfellow sings in the "Blacksmith," let us,—

"Each morning see
Some task begun; each evening see its close;
Something attempted, something done, to earn a
Night's repose."

Or, as it is even more beautifully expressed in one of the odes of Horace:—

"Lord of himself, to whom
The given to rest, as each day ends, 'I have lived.'
To-morrow let him invest his leisure
With darkest cloud or sunset ray seen;
He cares not what has been,
Nor from life's cloud blot out one fleeting hour."

M. U.

A CONCRETE FROM GAS LIME.

It is well known that gas companies turn out of their works a quantity of lime which has absorbed certain impurities from the crude gas. Hitherto, the only use made for the offensive smelling gas-lime has been the very limited one of spreading it on the land and at the roots of trees for killing insects hurtful to vegetation. Of course this is out of the question in the case of the large City gas-works, whose plant is too far removed from fields and orchards, and, although it is acknowledged that the gas can be better purified by lime than by any other material, the trouble of removal of the waste product has forced the adoption of other methods which do not involve so much expense in carrying.

As we mentioned some time ago, Mr. Thomas

Prideaux, of Sheffield, has been exhibiting blocks of concrete, mouldings, artificial stone slabs for hearthstones, and other objects, all made from this refuse or cement, and as it is the subject of a patent, and promises to furnish a useful material for building purposes, a short account of the results obtained up to this time may be useful. The gas-lime is ground under edge stones, and presents at first a uniform green colour. In this state it forms the raw material for making plaster or cement of various qualities and capabilities. According to the purpose required, it is used in this state, or it is calcined and re-ground and mixed with silicious matters. A wall may be covered with a smooth coat, which hardens free from cracks, for interiors; base-moulds may be covered with a dry coat of cement, impervious, it is asserted, to damp, and quite obnoxious, be it remarked, to cockroaches. A hearthstone may be formed, and sets in a few days into a hard block of stone, as well as mantelpieces and jambs, which, without any colouring matter, present a neat and stonelike appearance. It is remarkable that the peculiar character of the gas-lime is no longer to be detected when the cement has set. The sulphur compounds are oxidized rapidly, and some of the adhesive qualities of the cement are no doubt due to the formation of calcium sulphate or plaster of Paris throughout the mass of the material in the process of hardening. A rubble wall can be built up and plastered over to resist the action of water in the interval of a tide, as the properly prepared cement will set even under water. The latter property has induced Mr. Prideaux to propose its use for building sea-walls.

Mr. Baker, of the County Assessor's Office, informs us that a number of houses in Sheffield, where trial has been made of this material, have been visited and inspected since its first application to walls, floors, and hearthstones, now about twelve months ago, and that time only appears to tell in favour of its durability.

ROCK-WORK AND ALPINE GARDENS.

The amateurs who spend small fortunes on greenhouse plants, and who generally have not a dozen of the equally beautiful flowers of northern and temperate regions in their gardens, might grow an abundance of them, in and about well-designed and artfully-built rock-work, with a tithe of the expense required to fit a glass house with costly Mexican or Indian orchids; and to that end a pleasant volume on "Alpine Flowers," by Mr. W. Robinson, U.S., the author of "The Parks, Promenades, and Gardens of Paris," already noticed in our page, had better be consulted. "Our botanical and great public gardens," says Mr. Robinson, "in which alpine plants are usually found in frames, in a word, the slight elevation gives to the most different kinds on some absurdly-formed rock-work, half hidden under trees and shrubs, or a canvas roller-blind, as if very properly ashamed of itself, might each exhibit a beautiful alpine garden, at half the expense and trouble they now bestow on some tropical family displayed in single glass-houses. In a word, there is no garden of any kind, even in the suburbs of our great cities, in which they may not be grown and enjoyed."

Although hundreds of brilliant alpine flowers may be grown without a particle of rock near them, the slight elevation gives to the rock-work is very congenial to numbers of the most valuable kinds. The effect of a tastefully disposed rock-garden is very desirable in garden scenery. It furnishes a home for many pretty native and other interesting plants, which may not safely be put elsewhere; and therefore it is not surprising that the most sensible principle to be borne in mind, when making it, should be generally known.

The chief mistake generally made is that of not providing a feeding place for the roots of the plants that are to embellish the rockwork. In a word, state, alpine may be given, protruding the stems crowned by dense tufts of leaves and flowers, from very narrow chinks—as narrow, in fact, as those left in the singular structures which we denounce; but if we try to take up the wild alpine, it is found that its tap roots descend down by the side of the moist stones and underneath them, and then, perhaps, run on one side under the *débris*, and on the other into a fissure of soil or through a mass of broken rocks

several feet deep. Now this is impossible in the rock-works generally made. On them even the coarsest British weeds cannot find a resting-place, simply because the soil, and in this case of soil or matter into which the descending roots may penetrate, and find nourishment sufficient to keep the plant fresh and bright and well in all weathers. It is not only those who make their "rock-work" out of spilt bricks, cement, and portland cement, who are in this respect, but the designers of some of the most expensive works in the country. At Chatsworth, for instance, and also, to some extent, at the Crystal Palace, you see rockwork satisfactory so far as regards its distant effect in the garden landscape; but, when examined closely, it might well be imagined that rock- and rock-plants were never intended for each other's company, so bare are many of these large works of their proper and best ornaments. It is generally a pavement of small stones, huge masses of rock, or imitation rock formed by laying cement over brickwork, and in none of those cases is it adapted for the cultivation of high mountain plants.

It is quite possible to combine the most picturesque effects of which rockwork is capable with all the requirements for plant-growing; but, in the case of extensive rockwork-making, the owner must either call to his aid a landscape gardener, or may skill in the way, or possess much taste and knowledge of the work himself. It is easy to use the largest stones, and make the boldest prominences, and leave at the same time rather level intervening spaces and fissures, in which rock plants may luxuriate; but Mr. Robinson does not recommend such attempts of this kind—at least at first. It requires great taste to do it well, and the higher and bolder the attempt the more conspicuous will be a failure.

The best type of rock-garden is that in which, in addition to low-lying, stony, and rocky banks and slopes, where numbers of hardy and vigorous species may be grown, there are miniature peaks, cliffs, and ravines, with, perhaps, bog and water.

The most usual and deplorable of the faults in making rock-work is that of so arranging the stones that they seem to have as little connection with the soil of the spot as if thrown out of a cart,—indeed less so. Instead of allowing what may be termed the foundations, or apparent foundations, of the rock-garden to barely show their upper ridges above the earth, and thereby suggesting much more endurable ideas of rock than they really are, the construction of the bold and unsustained-looking masses usually seen, the stones are often placed on the ground with much the same idea that animates a bricklayer in setting bricks. Figs. 1 and 2 will explain exactly what is meant; both are accurately engraved photographs; both represent portions of artificial rockwork; the ugliest of the two was much the most difficult and expensive to make. A few loads of well-selected stones, allowed to peep from some gentle isolated mound or open sunny spot, and arranged as shown in fig. 1, would produce a better effect than several hundred tons placed in fig. 2.

An important principle to bear in mind in both making and planting is that, as a rule, much more vegetation than rocks should be seen. Where vast regions are inhabited by alpine plants, acres of crag with a stain of flower or fern here and there are very striking and imposing parts of the picture, but in gardens where our creations in this way can only be Lilliputian, an entirely different method must be pursued, except in places where great cliffs are naturally exposed, and even in this case an abundant drapery of vegetation is desirable (fig. 3). A rock-work is rarely seen in which plants predominate as much as they ought.

Rock-works made on the margin of artificial water are very often objectionable—rigid, abrupt, unwork, and absurdly unnatural. In no position is an awkwardness more likely to be detected; in none should more care be taken not to offend good taste. Charming effects may be produced on properly made rock-work near water, by planting it with a combination of choice moisture-loving rock-plants, *Yuccas*, *Pampas*, *Grasses*, and like subjects; but even the grace and beauty of the finest of these will not relieve the hideousness of the rock-work unless the plants are frequently placed by the margin of water.

It is the fashion to make the hardy fernery in some obscure and stunted spot, in which it would be impossible to grow alpine plants, but

* "Alpine Flowers for English Gardens." By W. Robinson, F.L.S. London: Murray, 1870.

there is no reason whatever why it should not be made in more open positions, and in connexion with the rock-garden. No plants adhere more firmly to hard vertical surfaces, or better suited to be found in perfect health, without any soil, than ferns. In a wild state you find the Maidenhair fern and many other species so rooted into mere little fissures in the hardest rocks, that no effort can get out a particle of root. Some of our own small British wild ferns are found on the face of dark craggy walls when they grow to be found elsewhere, growing spontaneously, in the same neighbourhood.

It is reasonable to assume that many ferns which in a wild state frequent half-shady spots would, in our colder climate, flourish best if permitted to enjoy all the sun of our cloudy sky, while ferns that inhabit sunny rocks in countries not much warmer than our own should always have the warmest positions we can give them on the rockwork. And in the case of the species that require shade, it is quite possible to grow them in the recesses of the rock-garden and in passages or niches, or to revest leading through it, even if a portion be not specially designed as a fernery. (Figs. 4 and 5.)

Rockwork is, as a rule, made for the display of mountain plants, or those which by their dwarfness fall into the class commonly known as alpine. Some cover rockwork with climbing shrubs and dwarf hedges, but in every case, unless where a rock is introduced for its own effect in the landscape, the object is to grow plants. Now, as very few of the subjects above alluded to like shade, or even tolerate it, it follows that this is an ignorant and bad practice. Many persons who arrange such things doubtless fear the sun burning up their plants; yet the sun that beats down on the Alps and Pyrenees is fiercer than that which shines on the British garden. But, while the alpine sun cheers the flowers into beauty, it also melts the snows above, and water and frost grind down the rocks into earth; and thus, enjoying both, the rocks form perfectly healthy plants. Fully exposed plants do not perish from too much sun, but simply from want of water. Therefore it cannot be too widely known that full exposure to the sun is the first condition of perfect rock-plant culture—abundance of free soil under the rock, and such a disposition of the soil and rocks that the rain may permeate through and not fall off the rocks, being also indispensable.

In connexion with alpine gardens, the masses of rockwork occasionally made of brick-rubbish, concrete, and cement, demand some notice.

There can be no doubt that as picturesque effects may be produced in this way as in any other, and that this variety of artificial rockwork may be admirably associated with shrubs and trees, and vigorous climbing and trailing plants, but it is utterly unsuitable for true alpine vegetation. When properly constructed, it is taken to make the interior of the cemented masses with deep beds of earth, leaving holes here and there in the face of the structure from which plants can peep forth, while the top is left open, and may be planted with shrubs or trees.

One of the simplest of all ways of cultivating alpine plants is in small rocky beds, arranged on the turf of some parts of the garden, cut off by trees or shrubs from the ordinary flower-beds, without any of the pretensions of the ordinary rockwork; one of these will give much greater satisfaction than many an ugly and extensive concrete and by the side of a little independent is readily constructed so as to not offend the nicest taste.

A satisfactory window rock-garden can be made outside of a window to which light has free access, by forming a miniature alpine garden on the sill. It is important to pay some care to the irregular spaces along the front margin, and packing a few small bits of turf peat or loam inside them to prevent the fine soil, afterwards to be added, from being washed out. Then fill in the hollow with sandy loam, mixed, if convenient, with morsels of broken sandstone. A few mosses or sandy-loving mosses should be half buried on the upper surface, and then the whole should be planted, the best time to do this being April. It is not merely possible to keep alpine succulents in this way: it is easy to grow a multitude of the most interesting and beautiful kinds. The attention required is trifling—some trilling—some trilling—in feeding and planting, a judicious selection of plants, and thorough waterings during the dry season. Small and brilliant spring bulbs might be employed to light up this tiny garden in spring. It would

also be desirable to plant subjects of a drooping character on the outer margin. The alpine succulents are all thoroughly hardy, and would remain in the best condition during the winter, but a little changing and re-planting every spring would be desirable.

The work to which we are indebted for these illustrations and instructions as to rockwork and alpine gardens has numerous other illustrations and much useful information on the subject generally. The second part of the volume consists of an alphabetical enumeration of choice alpine plants, with full particulars as to appearance, habits, culture, and selections for various purposes.

SCHWÄBISCH-GMÜND.

DOORWAY, CHURCH OF THE HOLY CROSS, GMÜND.

About twenty miles from Stuttgart, on the way to Nördlingen, stands the interesting little town of Schwäbisch-Gmünd. The situation of this place is most charming, surrounded on every side by lofty hills, valleys richly wooded, and watered by clear mountain streams. The many towers and spires of Schwäbisch-Gmünd rise up above a belt of rich foliage, and form a picture that is more like a dream than a reality. Upon inspecting the town, one is hardly not disappointed, for it is quite full of antiquities and curiosities. Unfortunately the walls have been nearly destroyed, but the gates and towers for the most part still exist, and show by their size and number that the place must have been far more important in the Middle Ages than it is at present. There are many fine examples of timber houses, some of which date as early as the fifteenth century. The Corn Hall, the Hospital of the Holy Ghost, and the Schmalk Hall are the most remarkable amongst the secular buildings. We should here mention, for the information of our readers who are unacquainted with the German language, that Schmalk is clarified butter, which, during the Middle Ages, and even down to the last century, formed the staple commodity of Schwäbisch-Gmünd. The Schmalk Hall is a remarkable building, entirely of stone, with solid vaulted ceilings in two stories.

The Franciscan church at Schwäbisch-Gmünd has been a good example of German First Pointed work, but is so terribly modernised that little of its original beauty is now left. It consists in plan of a large, broad nave, without aisles, and a long chancel, which is about half as wide as the nave. The windows have all been single lancets, except at the east end, which was originally lighted by a triple lancet window (the church is, of course, square-ended).

The doorways are simple, but good. They are treated in rather a singular manner. The base-molding of the building is very simple, and so as to form a kind of framework to the arch. The top portion of the interior which is not modernised is the vaulting of the choir, which is very rich and beautiful, and is supported upon corbels ornamented with very fine early foliage. It is difficult to say how the very broad nave was originally clothed; at present it has a coved plaster ceiling. It could never have been vaulted, as there are no buttresses, and the walls are of no great thickness. It is to be hoped that this interesting church will shortly undergo as careful a restoration as that which is now being carried on at St. John.

The great glory of Gmünd is the magnificent church of the Holy Cross. This superb building was commenced in the year 1351, as we are informed by the following inscription on the north doorway of the choir: "*Anno Dom. 1351. pontificatus primus lapis pro fundamento hujus Curie XVI. Kal. Augusti.*" The nave, which was the last part of the church founded, was not completed till the year 1410. What makes this church of particular interest to the antiquary is the fact that it was designed and carried out under the direction of the two celebrated architects—Herrig and Peter von Arler, who were the architects of the churches of Kulm, in Bohemia; the cathedral bridge, Rathhaus, and gates at Prague; the churches at Nördlingen, Hailf, and Dinkelsbühl; and who are amongst the reputed architects of the cathedral at Milan. There was also a third member of the same family, Henry Arler, the younger, who assisted his father Peter in the design for Milan Cathedral. There is a tradition at Gmünd that the Certosa at Pavia was also designed by a member of the same family; but there seems to be very little foundation for this report; and the fact that the Certosa is so

very Italian in character would strongly militate against the idea of its having been designed by a German architect. The church consists of a nave and aisles, the same height and under one external roof, and a choir and aisles also under the same roof. The choir is terminated with an apse, the aisle being carried round the same height. The choir is surrounded by eleven radiating chapels and two porches. There are also transeptal chapels, but as they are beneath the choir, they are not visible from the appearance of the church, which is what is called in Germany a "hallenbau" that is to say, a hall-shaped building. The nave has eight bays, the choir four. The entire length of the church is about 290 ft., the width of the nave internally 74 ft., and the height to the vaulting is about the same. There are five great doorways—three to the nave, and one on each side of the choir; that on the south side is singularly beautiful (see engraving), and bears a strange kind of resemblance to some portions of the cathedral at Milan, nor is this kind of family likeness between the churches at Gmünd and the cathedral at Milan confined to this doorway, for the general effect of the interior of this church is wonderfully like the great Italian cathedral. We have here the lofty aisle-aisles, the slender columns, and that general look of space and height so remarkable at Milan. We respect the church at Gmünd superior to Milan, and that is in the detail, for here there is none of that overloading with ornament, nor do we find that horrible cabbage-leaf foliage which is so offensive in the great Italian church. This is easily to be accounted for by the fact that in Germany Gothic architecture was indigenous, and the commonest workmen understood it, whereas in Italy it was at best only an exotic, and never thoroughly understood; and thus Italian workmen carrying out the designs of a German architect would be sure to give to the detail that elegance and want of elegance so peculiar to all Italian Gothic work.

Before leaving this church we must not forget to notice the quantity of beautiful and interesting furniture which it contains. In the north transeptal chapel is an altar with a splendid carved oak reredos, about 30 ft. high; in general form it is a really semicircular arch, filled in with a representation of the "Tree of Jesse." The figures, which are very numerous, are coloured and gilt, and all the carving is most delicate and beautiful. Above the arch is a series of very intricate canopies; the centre one rises above a crucifix, life-size, on either side of which are the figures of St. Mary and John. Within the semicircular arch or border, are four seated female figures of great beauty; each has a child in her arms. They are thus explained by Herr Pilzer, the energetic and learned reader of this church:—"The first figure represents Sarah bearing in her arms the infant Jacob, the second is Mary, who bore the second Mary crowned, with the infant Saviour; the third is Anna teaching the child Jesus to walk; and the fourth is Bethesda, with Christ as David's son." Above these, in the branches of the mystical vine, are nearly a hundred small busts of prophets and characters from the Old Testament. The execution of this superb work of art is unknown, but it is probably the end of the fifteenth century. We are informed that this reredos or shrine was originally over the high altar of the church, which would well account for its great size and importance; but that it was removed to its present position about the seventeenth century, or the introduction of the "Roman rite," which requires that the tabernacle should be on the altar.

The chapel, or transept, in which this wonderful altar now stands, formed so part of the original design for the church, but was added by Hans Bollinger (the celebrated architect of the tower of the cathedral of Ulm), after the fall of the two towers which originally flanked the choir of this church. These towers appear, if we may judge from an old picture still in one of the side chapels, to have formed portion of an earlier building, and were Romanesque in character. Over a doorway near the choir is a complete suit of armour given by the Emperor Charles V. to Baughain, who attempted to defend the town against the Schmalkaldic army; and near this latter is a cannon-ball hit embedded in the wall, with the following inscription below it, in old German:—

"In 1546, on the 26th of November, in the Schmalkaldic-Protestant league against the Emperor Charles V., John Frederick, Duke of Saxony, bombarded and took this town of Gmünd. The church was burnt down, but the church remained otherwise unharmed. God be praised."

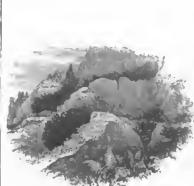
ROCK-WORK.



4. Ravine in Rock-garden (artificial), with *Alpine* Flowers in every Crevise.



5. Entrance to Cave for Killarney Fern in Rock-garden.



1. Right.



3. Rude Stair from deep Recess of Rock-garden; every Chink and Crevise Massed over with Alpine Flowers.



2. Wrong.

The ten chapels which lead out of the aisle surrounding the apse contain many interesting works of art: two of them have ancient altars of great beauty. The one dedicated to St. Anna is a singular example of minute sculpture, and that of St. Sebald is a fine work by Veit Stoss. The life-sized statue of the saint carved in wood is very noble and full of expression. Below the statue is a large triptich, the doors of which are painted with subjects from the life of St. Sebald by Martin Schaffner, of Ulm, in 1521. The middle portion of the shrine or triptich is filled with elaborate sculpture, richly painted and gilt. All the other altars are modern Gothic work. Some of them are not without considerable merit. One of these has old painted wings attributed to Hans Baldung Grün, a native painter, of Gmünd, at the commencement of the sixteenth century.

The eastern chapel, which would in England have been the "Lady Chapel," does not contain an altar, but has instead a life-sized representation of our Lord's Entombment, with eight attendant figures. The whole is carved in stone, and decorated with colour. It is a work of the fourteenth century. On the side walls of this chapel are two very interesting frescoes of the same date as the Entombment. They are said to be by a Cologne artist of the fourteenth century, and represent the "Crucifixion" and "Deposition."

There are some curious monuments in these chapels, and several fine old escutcheons, some of which date as far back as the fourteenth century. They are all circular, and carved out of wood. The choir stalls are good Renaissance work, with very striking figures of prophets and apostles standing on the screen at the back.

These figures appear to be of an earlier date than the stalls and screens themselves.

In the nave of the church is a beautiful little monument, in form like a churchyard cross. (We shall give a drawing of this in a future number.)

The treasury of this church is well worth seeing, as it contains all its ancient presses, with wonderfully complicated and elaborate locks and hinges. When the French came here in the year 1796 this church possessed 10 cwt. of precious metal in the form of church plate; and even now it is very rich in works of art of this description, the most remarkable of which are the following:—

A cross (crucifix), with figures of Mary and John, in silver, 4 ft. high. The emblems of the Evangelists are at the ends of the arms. The work is very elaborate; date 1480.

A renaissance, of silver, ornamented with tabernacle-work; about 3 ft. 6 in. high. Early sixteenth-century work.

A renaissance, of silver Renaissance work; sixteenth century. A pair of silver cruets, with basin. Augsburg work; date 1600.

A silver cup or chalice, given to Raabobain by the Emperor Charles V., with the following inscription engraved upon the cover:—"Carolus V. me dono dedit;" and on the foot, "Calicem hunc a pio Carolo V. Ro. imp. in festo Epiphaniæ anno 1552 (Læponti (Innsbruck) oblatum et sancti Gaudensii (of Gmünd), constantie obediens et perpetue memorie græ (gratia) donatum honestissimus vir Joannes Raabobain, consul imperavit."

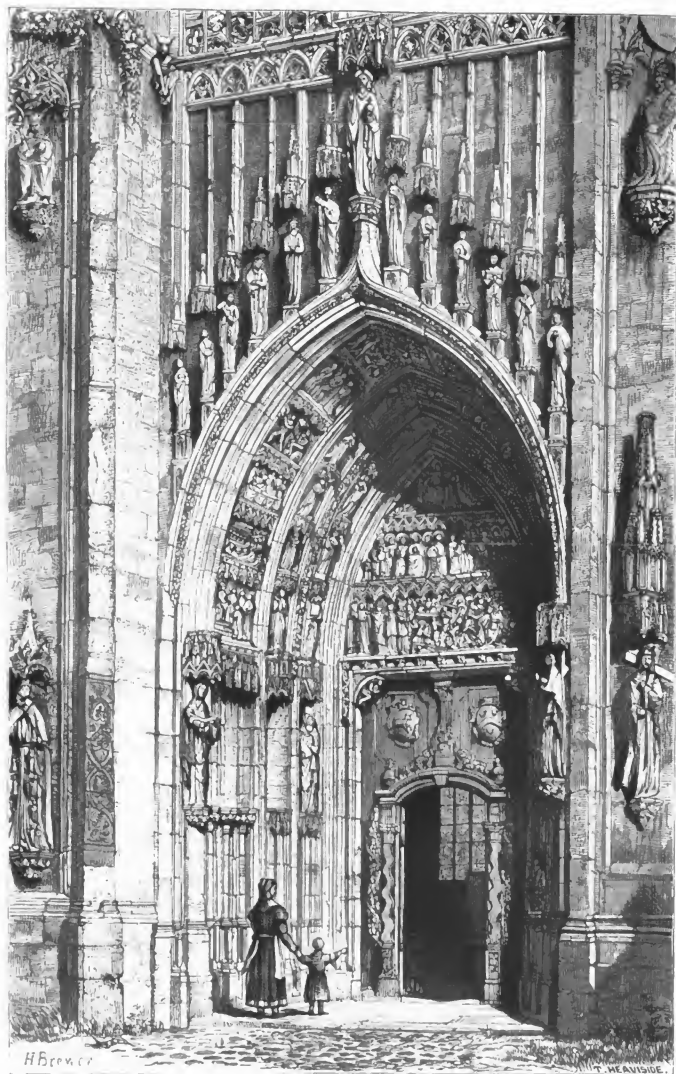
A thurible, of silver; a pix, of Early Romanesque work; a reliquary, fourteenth-century work; and a silver statue of the Madonna, for which a

sum of 300l. was lately offered, and we are glad to say refused.

This church has no tower or spire, but there is a small steeple, of bad design, on the roof; and a few yards from the north side is a quadrangular structure of stone, bearing a belfry constructed of huge beams of timber, and terminated with a tall pyramidal roof covered with green, purple, and yellow glazed tiles. This contains the bells, one of which is called "Hosanna." It bears an inscription with the names of the four Evangelists, and the date 1456. Another bell weighs 75 cwt., and bears the date 1595. A third bell bears upon it the words, "Ave Gratia Plena," in thirteenth-century characters. It is said that this bell originally hung in one of the towers which fell in, and that the bell remained uninjured. The belfry is a most picturesque object: it was probably erected soon after the fall of the before-mentioned towers.

This church has been very satisfactorily restored, and the yellow wash with which every part of the interior was disfigured has been scraped off. The only unsuccessful portions of the restoration are the high altar, which is too large, and rather heavy in detail, and the stained glass, which is amongst the worst we have ever seen, and is in glaring contrast with the little old glass that exists in the church. However, the people of Gmünd, and, in fact, the kingdom of Württemberg, are to be congratulated upon possessing such a noble church, and are to be greatly praised for the condition in which it is kept, and the great care bestowed upon it.*

* To be continued.



CHURCH OF THE HOLY CROSS, SCHWÄBISCH-GMÜND.

ON MEDIEVAL TRIPOD COOKING-POTS OR MARMITES.

In Halliwell's "Dictionary of Archæo Words," a marmite is described as "a pot with hooks at the side." This, however, is hardly a correct definition, a marmite being more properly a metal two-eared cauldron standing on three legs. In the present paper, therefore, we wish to confine our remarks exclusively to the Medieval cooking-pots of that form, specimens of which have been exhumed at different times in many parts of Great Britain, Ireland, and France.

Tripod cooking vessels or marmites, as they have been formerly in common use, and even at the present day culinary vessels, very similar in appearance, are not unknown in certain districts. In shape, marmites "differ from modern iron pots in their greater height and narrowness, and in some examples by the length of their upper member; a few, however, are quite globular. In size they vary from a capacity for holding one quart to nine gallons of fluid."* They are usually made of bronze or bell-metal, though occasionally of iron or brass. Tripod-vessels of this form are generally considered to have been in use between the twelfth and thirteenth centuries, and these must be classed with relics of the Medieval period. By some, however, they have been designated "Roman camp-kettles," principally on account of their having been sometimes dug up near the sites of Roman encampments, or other traces of that people. But if we examine the quality of the metal of which they are composed, it will be found to be of an inferior kind to that used by the Romans; also there is in most of these pots a want of classic art, of which, says Dr. Wilson, "the commonest Roman urn or amphora rarely fails to betray some trace."† Besides, it should be borne in mind, that tripod cooking-pots have never formed a part of any hoard of Roman antiquities; and that in the many representations of domestic and other objects on Roman altars, and suchlike lapidary remains, they are entirely unknown. When we add to these objections against their being Roman workmanship the fact that Medieval inscriptions have in some instances been found on these very pots, it seems pretty conclusive that they were used in the Medieval kitchen for culinary purposes.

A very highly-finished marmite, with inscriptions as exhibited before the Society of Antiquaries in 1801. It is formed of bell-metal, and probably belongs to the fourteenth century. The ornamentation is at once elaborate and unique, consisting of the symbols of the four Evangelists, various animals, and devices relating to the chase. Round the vessel are the words—

Je su pot de grant henbur
Faisant a frr de ban sabbur.

Below we read—

Vilimus Angeli mri fecit fieri.

Three elaborate plates of this marmite may be seen in the *Archæologia*, vol. xiv.

On a gravestone of the fourteenth century preserved in the museum at York, there is a curious representation of one of these pots. A cross fleury extends the length of the stone, and on one side of this cross is a bell, and on the other is a marmite. The stone was probably erected to the memory of some metal or bell founder; and M. l'abbé Cochet concludes, from a figure of a marmite appearing under these circumstances, that in the fourteenth century marmites were as common as bells.‡

Again, with the marmite found at Loges, near Figeac, in 1845, three copper coins were discovered, on each of which was engraved a *seu-de-lis*. This is an additional proof that these cauldrons belong to a post-Christian era.

Of the marmites dug up in Great Britain, that found at Bodriid, in Deuchburgh, is very characteristic. Its height is about 10 in., and it holds approximately one quart. The body of the vessel is ornamented with three bands of lines set close to each other; and there are also numerous square patches irregularly disposed on its exterior surface. This tripod-pot is made of bell-metal, and was consequently, like all other marmites, cast in its present shape.

Four marmites have been exhumed in Lanarkshire, Scotland. One was found at Fyfe Kail, in the parish of Culter; another on the line of

the Roman road, in the same parish; another near to Liberton Church; and the last in Biggar Moss. Several similar vessels were also found in the Loch of Leya, in Kincairdine, when the water was drawn off in 1850. They had sunk some 3 ft. into the soft bed of the lake.

In the north of England these tripod cauldrons are not uncommon. One found in Northumberland, may be seen in the museum at Alnwick Castle. Bruce, in his "Roman Wall," gives an illustration of another, discovered near Haydon Bridge, in a cutting on the Newcastle and Carlisle Railway. This marmite very much resembles those seen in France. It also engraving in plate xvi., "a pan, evidently intended for culinary purposes," with a horizontal handle curved at the end. It has three very short legs.

Of the tripod cauldrons belonging to more southern counties, that found at Shady Camp, Cambridgehire, is peculiar. It is assigned to the sixteenth century, and on its upper member the letters N. V. in relief. It has also long flat handle, like the tripod-pan just referred to. On this handle an inscription has been traced, although not satisfactorily deciphered.

Signs of ornamentation, consisting of circular indentations, may be seen on a similar handle which was discovered at Wiscot, near Chesterfield, in Derbyshire. This handle is 9 in. long. The pot itself is 7½ in. in height, and 5½ in. in diameter. It is globular in form, with raised cords encircling the body of the vessel. Although by some this cauldron has been called a Roman camp-pot, yet, judging from its very rough make and appearance, it is more likely to be Medieval utensils, which should be classed with the tripod vessels of that period. A representation of it may be seen on reference to the *Journal of the British Archaeological Association*, vol. viii., p. 55.

Another very fine marmite, buried 4 ft. or 5 ft. beneath the surface, was disclosed, in 1840, by some workmen, while digging the foundations of a house at Norwich. It is of considerable size, its height being 2 ft. 9 in., and the diameter of its mouth 1 ft. 2 in. It is a globular vessel, round its largest part measuring nearly 4 ft. For the convenience of transit of so bulky a marmite, "it has a handle projecting at each side of the rim, forming an acute angle." This is probably the largest tripod cauldron hitherto exhumed in this country.

A toy-marmite, about 2 in. high, was dug up many years ago in the parish of Scalford, Leicestershire. It is made of bronze, and is exactly similar in shape to those of larger size. Its practical use for culinary purposes, however, is out of the question; possibly it served as a model, or more probably it was merely a child's plaything. A wooden of the same size as the original may be seen in the *Gen. Mag.*, Nov., 1861, p. 549.

In the museum of the Royal Irish Academy is preserved a tripod-vessel, or marmite, bearing the date 1640. This cauldron, "of compact, sonorous brass, is one of the largest and most perfect ever found in Ireland; it rests on three decorated feet, stands 25 in. high, is 6½ in. in girth round the widest portion, and 14 in. across the mouth. A large projection attached to the bottom shows where the metal was poured into the mould. The spout is 4 in. long, and the legs 9 in. high."‡ The date, 1640, stands in relief on the base. There it are the letters E. H. It has been suggested that this vessel was used in brewing or distillation, on account of its having a spout, which is not a usual feature of these three-legged pots. This specimen is said to have been found near Macroom, county Cork.

Another marmite, discovered in a bog at Lowdown, county Westmeath, may be seen in the same museum. It is 21 in. in height, and, like the preceding example, formerly had a spout; a piece of metal now plugging up the aperture. Altogether, there are no less than sixteen of these cast metal-pots noted in Sir W. Wilde's *Excavations*, vol. i., p. 24. It has a similar handle, curved at the end.

One more Irish marmite must be noted. This

was found in a bog in the vicinity of Cockstown county Tyrone, and was preserved for a long period at Killymoon. Since then, however, it has been removed to Belfast. Its capacity is 6½ gallons, and the entire vessel weighs 81 lb. The mouth is 14 in. across, and the internal depth of the vessel the same. Outside, its extreme diameter is 10 in., and 6 in. The thickness of the metal at the bottom of the cauldron is estimated to be ½ of an inch.

Marmites are of common occurrence in France. In general appearance they are very similar to those found in our own country, judging from those now deposited in public and private collections of antiquities. One of these is in the museum at Nantes which had been deposited in a marsh at Donges; there are also five in the museum at Abbeville. The late M. Honnigant, of Nogent les Vierges, had two in his collection. One of these was found near the camp at Celigny; the other specimen came from Riez, near Lisacourt.

In a descriptive work by M. l'abbé Cochet on the antiquities of the department of Seine Inférieure,* we find notices of nine marmites or tripod cauldrons, all of which he classifies as belonging to an uncertain period. Elsewhere, however, he assigns them to Medieval times. The localities and dates at which these marmites were found are—two at Lillebonne in 1836; at Loges, near Fécamp, in 1845; at St. Nicolas de la Taille in 1840; at Tourville la Chapelle, near Dieppe, in 1847; at Val de la Haye, near Rouen, in 1847; at Vatteville, near Dieppe, in 1859; at St. Pierre les Elbeuf in 1861; and at Ancretville-sur-Mer, near Fécamp, in 1862.

Of the tripod-pots just mentioned six are preserved in the museum at Rouen; the remaining three being in private collections. With reference to that discovered at Ancretville-sur-Mer, the following particulars may be interesting. This marmite was dug up in the garden of M. Cadnot, a merchant at Ancretville-sur-Mer, on the 17th of November, 1862, from a depth of about 1 ft. 8 in. Its height is about 13 in., diameter across the mouth 5 in., and its circumference measures about 3 ft. 1 in. On one occasion, a copper bowl was found without feet or ears. As to the use of both these objects, M. l'abbé Cochet considers that by their being blacked with smoke it clearly shows that they had been used as culinary vessels. Both, when found, had their mouths downwards, and covered corroded silver plates. It is not probable that in this instance, at least, the marmite was buried by design in order to protect the valuables that had been placed within it. So, likewise, at Vatteville, and Loges, where bronze candlesticks and other household articles were concealed with the marmite. But, as to the use of marmites, they have evidently been accidentally covered with earth, which would explain why they are so often met with near the surface.

There is but one more individual marmite to which we desire to call attention. It was found in a coffin at St. Maurice de Gençay, according to the manuscript catalogue of the museum at Poitiers, where it is preserved. This, we believe, is the only three-legged pot ever discovered in such a situation. The body of this marmite is almost globular, and a piece of metal, rivetted on the outside, shows where a spout was once inserted.

The method of using these tripod-pots is very obvious. All those that we have described, with one exception, stand on legs of sufficient length to allow of a fire being kindled beneath the body of the vessel, without suspending it by its projecting ears. It has been conjectured, however, that the marmite, being a common name, sometimes attached to these ears; but, if so, it is strange that some of the tripod vessels hitherto found have been thus accompanied. The horizontal handles, which belong to a few specimens, are quite of a different character, being sometimes like a turned ear, or a small ear, and sometimes a flat instead of round. Marmites, with this kind of handle, were most likely intended for a different purpose from those having two ears of the ordinary form. It must also be remembered that these ears are always fixed in such a manner as to allow of the entire vessel being turned over on its rim, if required. Vessels, similar in shape to these Medieval marmites are still used in many country places for the baking of bread. The method employed is very simple. The cooking-

* Sir W. Wilde's "Descriptive Catalogue of the Museum of the Royal Irish Academy," p. 53.

† "Fribriaræ Annæ de Societate." Second edition, vol. ii., p. 400.

‡ *Bulletin Monumental*, 3rd series, vol. ix., p. 318.

* *Journal of the British Archaeological Association*, vol. xiv., p. 24.

† Sir W. Wilde's "Descriptive Catalogue of the Museum of the Royal Irish Academy," p. 53.

* *La Seine-Inférieure Historique et Archéologique*, par M. l'abbé Cochet, Paris, 1864.

† *Bulletin Monumental*, 3rd series, vol. ix., p. 318.

‡ *Bulletin Monumental*, 3rd series, vol. ix., p. 318.

A fearful catastrophe is reported by the Atlantic Cable. The floor of the Court of Appeals in the capitol at Richmond had fallen through to the Hall of Delegates below. According to Reuter's telegram, fifty-nine persons, including a number of members of the Virginia Legislature, were reported as killed, and 150 others as injured. Not more than about twenty remain unscathed. Among those who escaped were Governor Walker, the judges of the court, and several members of the State Legislature.

OUR COMMONS.

The great importance of preserving the suburban commons and open spaces to serve as lungs for the overgrown and continually extending body of this our London, has frequently been insisted on in our columns; and though everybody readily acknowledges the truth of the position, yet, as it is not the business of any one in particular to look after the matter, the gradual appropriation of huge masses of land is continually going on, depriving the public of space for exercise and healthful recreation.

From time to time it is discovered that a park is wanted in some particular quarter, and not having wisely adopted the cheap prevention of forbidding enclosures, we are driven to the costly cure of purchasing land at building price.

Within a recent period about three-fifths of Wandsworth Commons have been appropriated and sold by the lord of the manor, treating the land as if he held it in fee, and not considering that, with the homage, he ought to form an institution for the preservation of the commons for the benefit of the copyholders and freeholders and the public, instead of violating every principle forming the essence of the theory of copyhold.

An attempt is now being made to check further encroachment in this direction. Mr. H. W. Peck, M.P. for Mid-Surrey, has undertaken that if a sum of 4,000, can be raised he will supplement it by a further sum of 1,000, to form a fund for the purpose of instituting proceedings to take up everything irregular which has occurred during the legal term.

This is a matter which interests all classes of society, and none more than the working man, — peep up each week in his work-shop. We are informed that a large portion of the required sum has been already raised, and that collections are being made in every large engineering and other establishments.

There is no time to be lost, as the month of June now next ensuing is the period fixed by Mr. Peck for the acceptance of his terms. It is announced that subscriptions will be thankfully received by either of the treasurers, Mr. J. A. Dubouison and Mr. T. S. Watson, both of Wandsworth Common.

WHO SHOULD KEEP THE DRAWINGS?

Is the time-honoured adage, "*Mos legem repit*," is to exercise, as it should, its wholesome influence over Mr. Ayrton's legal advisers, I may congratulate Mr. Edward Barry on the pervading unanimity between town and country architects with reference to this question. The council of the Manchester Society of Architects, and now that of the Liverpool Architectural Society, are found to be on this question in perfect accord with the Institute of British Architects, widely though they differ in other matters of professional practice.

There is something especially remarkable about this Ayrton and Barry controversy. How is it that we have waited till 1870 to hear (as it were) many architects will now do for the first time of its being raised at all? We have all heard of architects carelessly hoarding up their old drawings for years — ay, for long portions of a century; or their having them dusted, re-labelled, and repacked in their nests or portfolios; and of their making, after rare intervals, a grand holocaust of the collection; but what architect can remember a case of a client's asserting and persisting in his claim to these documents, as his own property?

Writing just now with reminiscences of active architectural practice, extending further back into the present century than I care to own to, I can call to mind only two instances of such an application as this one of Mr. Ayrton's, made in each case with the mere view of retarding the settlement of the architect's claims, and at once abandoned, on the very natural rejoinder, — "*Those drawings have already been supplied* —

to your builder. I have, of course, a set for my own office use and reference, and these documents I do not supply to any one." It is, indeed, the natural solution of the question.* If Mr. Ayrton inquires into the practice of architects all over the country, he will find it to be so. Surely there must be (altogether apart from any question of copyright) a time when for his mere 5 per cent. an architect's copy of drawings comes to an end! First, we have the preliminary sketches, till we all three of making them; and wise architects limit these very properly to one set. Then come the contract drawings, as supplied to the builder (or how else is he to build)? And then, if the architect, or how is he to build? This latter set he invariably retains. If he ever gives them up, it is done in courtesy, by accident, or from sheer indifference as to what in one's modesty we so often consider mere lumber; but of contract drawings delivered by right to an employer, — save for special deposits in public archives, and subject to payment for the cost of preparing them, — there are none known in the profession. If there were, should we not have heard of them long ago, and would it not be the universal practice of architects to get out for their 5 per cent. three separate sets of all contract drawings, one for the contractor, one for the architect, and one for the client? And a third for the architect to reserve, "for the perpetual memorial of the thing?" Can Mr. Ayrton's advisers name a single architect's office in the kingdom where it is, or even where it has been, the custom to prepare this third (triplicate) set for the author's?

There is so much custom in the profession. It was all very smart of the Chief Commissioner to stand up in his place in Parliament and exonerate (I presume in the absence of their president, the honorable member for Bath) at the Royal Institute of Architects, as he certainly who had met together and agreed, "do; but the Institute had merely deemed it (pace M. J. Dupanloup) "opportune" to declare what was the received and invariable practice and mind of the entire profession; and a very "opportune" declaration it was. There is nothing out of the way or abnormal about it. Here is a clause taken at random from a printed office-form of general conditions at hand; and one annexed for years to architects' specifications. Architects all over the country would easily supply Mr. Ayrton with other such clauses, *solidum*, if not *apocrypticum*, veritas: —

The original contract drawings and the specification are to be lodged with, and are to remain in the possession of, the architect, for his future reference, whether official duplicates are issued or not. . . . The architect will produce by the contractor, free of expense; these are to be by him carefully preserved on the site (and not elsewhere) during the progress of the work; and if lost, stolen, or destroyed they are to be forthwith replaced at his expense," &c.

What architect would be so imprudent as to accede to any other than this obviously natural arrangement? How, if he does not retain these documents, on which peradventure (and in Mr. Barry's case really so) he may have been legislating for years, is he to prove to both client and contractor that he has acted with strict equity in all the many cases of doubt and intricacy that have cropped up from time to time during the progress of the building? Is it a most grave and serious matter to officiate at all as architect of any building of magnitude; and any one who ventures on such a task had need preserve about him, to disarm suspicion (for he can't avert it), every contract drawing, specification, order, memorandum, and document of whatever kind, as memoranda of a grave transaction, he knows not what question may arise out of, any time within the next five or ten years. These documents the Chief Commissioner seems to regard as goods and chattels, delivered per invoice, "*this side up with care*," and all the rest of it. It is not the client — whether for house, or otherwise — who is to be responsible for their preservation, having been used as tools or instruments in the performance of a very grave act of trust, are left naturally with the man who, from the first inception of the building scheme or plan to the signing of the certificate for balance of contract, has had every care of the documents, their execution, their delivery, and their preservation. It may be in that interim his *sole arbitrament*; itself a necessary, an unavoidable condition of there being any architect at all.

In courtesy to his client, and even to his con-

* We do not admit even this. The builder is bound to return the drawings to the architect, — *En*.

tractors and their sureties, it would seem to be the duty of an architect to retain the contract documents. Are architects, who idly give them up, quite sure that a contractor or his surety, damaged by a client's retention of them, would not have in law a just cause of action for damages? These papers are not to be looked on as rows of candle, hanging up in the architect's "shop," that ought to have been sent in to the client, who has "paid for them."

Why does the Chief Commissioner ask for these documents, and persist in having them? Surely not to put them to any irregular use, but to the obvious prejudice of their author.

I write in perfect ignorance of the contending parties, save having to my knowledge met once on Mr. Barry, or upon his formidable correspondent.

AN ARCHITECT.

THE DRAWINGS OF THE HOUSES OF PARLIAMENT.

MR. CORRIE, the hon. secretary of the Birmingham Architectural Society, forwards to us the following resolution, passed on the 28th of April last: —

"Resolved, — That the Birmingham Society of Architects being of opinion that by the rules and practice of the profession the drawings of the Houses of Parliament should be secured to the architect, and that he should be enabled to secure Mr. Barry that he will have their support in resisting the demand of the First Commissioner of her Majesty's Works to deliver up the drawings prepared for the Houses of Parliament."

We understand that next Monday is reserved at the Institute for discussing the Ayrton v. Barry question, by the light of the correspondence just published at a Parliamentary paper.

THE BUILDING ACT.

Sir, — Sir William Tite is now introducing a new Building Act, and I take the opportunity to ask, in the interests of methodic architecture, why we may not have a clause to permit window-frames to be fixed flush with the exterior of walls, as in houses built prior to the Act now in force.

Probably reveals are the most distinguishing feature of the houses of our time, and I do not think it is too much to say that the Act which enforced them struck the final death-blow to the picturesque in building. To explain my meaning, I will invite comparison between an old house, with its windows not marked, but treated as surface, the frames and mouldings forming their legitimate margin, and a house of our day, with its deeply-gashed windows, its tiny casings, and cashes, perhaps relieved by its grandiose cement architraves, or its paltry Gothic stonework, and its mean iron columns.

On the ground of taste only I am not ashamed to claim a space in the *Builder*, not to appeal to the President of the Institute of Architects; nevertheless, on the score of utility, it is evident, and I believe it has been maintained in theoretical books, that the glass should be as near as practicable to the exterior to obtain the greatest light, — a grave consideration in our narrow lanes and courts.

It is scarcely conceivable that the existing rule is practically a security against fire; at any rate, it is desirable to invite evidence from persons experienced in such matters.

HORACE GUNDEL.

At the meeting held at the Surrey Commercial Dock-office, Fenchurch-street, to organize an opposition to the Bill before Parliament "for consolidating and amending the Building Acts relating to the metropolis," Mr. Peter Hilt, who was called to the chair, said that if the 11th clause of the Bill passed, the wood trade of Mr. Taggart and the dock companies were also opposed to the Bill on other grounds, and the Government, or those who had charge of the Bill, must be pressed to refer it to a select committee, where all parties could be heard. Its injustice and impolicy, however, did not admit of a moment's doubt. Ultimately the following resolutions were carried unanimously, the movers

bout to get out of the draughts, or muffling up their lady friends, and using means to protect their own necks and heads, or even replacing their overcoats. And see to our modern omnibuses! If old ones were close and stuffy, the new, or rather the remodelled old ones, are stuck all over with "ventilators," and the vehicle, while in progressive movement, is converted into a perfect funnel, through which never-ceasing and injurious streams of air are doing their scourge and rheumatic and consumptive work upon the passengers. Was there ever anything more idiotic than the open, fixed, stable-ventilators behind the horses, which admit the draughts (and the foul steam and smell from horses, cloaks, &c.), winter and summer, under the heads of the passengers? The blockheads who originate and who allow of such absurdities ought to be doomed to have their own thick skulls exposed continually to such draughts.

Notwithstanding all that we have now said, however, there is much still to do in favour of ventilation, even as regards a knowledge of its importance, and the promotion of arrangements for securing it; and Dr. Leake's advocacy of instruction for the young of all classes in this and many other subjects connected with health and life is much needed, and is capable of doing great good if well seconded and followed up in these days of educational reform.

VARIORUM.

THE current number of the *Art Journal*, a very good one, by the way, contains an illustrated account of Peschiera, the home of the stately Sidneys, by the editor.—The British and Foreign Mechanic and Scientific Instructor is a cheap and useful periodical devoted to the spread of technical instruction in all arts and industries (40, Tavistock-street).

Miscellaneous.

The New Library and Museum for the City.—At a recent meeting of the Common Council, Dr. Sanders moved the adoption of the report of a select committee, in relation to the erection of the new library and museum in Basinghall-street, for which the Corporation passed a vote of 25,000. The report submitted for the approval of the Court, plans, designs, and model for the erection of the new library and museum, and recommended that proper muniment rooms for the archives of the Corporation should be provided in a portion of the basement of the building, at an estimated expense of not exceeding 2,500. The building could be utilised for the guests of the Lord Mayor upon state occasions, and thus they would save 19,000, which had been thrown away since the commencement of the present century. If the Corporation were desisted to be destroyed, they would have in the new library and museum another work of public utility and beauty to point to as the work of their hands. The motion was carried unanimously.

Crystal Palace.—The new season will commence on this Saturday, May 7th, with a musical festival, under the management of the Sacred Harmonic Society. The orchestra, which will include the entire bands and chorus of the Sacred Harmonic Society and the Crystal Palace Company, and the 2,000 members of the Handel Festival Choir, as well as other amateurs and professors of eminence, will number upwards of 3,000 performers. A very large sale of the new May season tickets has already taken place. When the low price at which the season tickets are issued, and the enormous (over 45,000) amount expended in providing entertainment for the delectation of visitors are considered, it is not to be wondered at that the number issued continues to increase. The attractions announced this summer are more varied and numerous than perhaps on any former season. The principal features will be a series of eight grand summer concerts, at which all the artists engaged at the Royal Italian Opera, Drury-lane (as well as other engagements still pending), will assist.

Destruction of a Palace by Fire.—Advices from Egypt state that a new palace just finished for the Viceroys at Rameh, near Alexandria, at the cost of at least 200,000, has been completely destroyed by fire.

The Marquis of Westminster and Working Men's Clubs.—A crowded meeting of the working men of Pimlico, Chelsea, and Westminster, has been held at the Pimlico Rooms, Winchester-street, Mr. W. H. Smith, M.P., in the chair. Mr. T. Paterson, one of the hon. secretaries of the Working Men's Clubs and Union, stated that the Marquis of Westminster had offered a plot of ground in Ebury-street, Pimlico, on which to erect a building to be used as a Working Men's Club for the district, and in addition he had offered the sum of 1,000, towards the cost of the building. This offer had been made to the Council of the Union, who now laid the matter before the Working Men's Club. A resolution to the effect that the offer made by the Marquis deserved the hearty acknowledgments of the inhabitants of Pimlico, and should be met by corresponding efforts on their part to support the proposed institution, was carried unanimously. The meeting also pledged itself to co-operate in the support of the scheme by raising additional funds.

Eastern Progress.—The King of Ava is determined that his dominions shall no longer be out of the world altogether. His Majesty has offered to open telegraphic communications between Rangoon and Batavia, being the western extremity of the empire from his own part. The Indian Viceroy has expressed his pleasure with the proposition, and has caused his thanks to be conveyed to his Majesty. The Viceroy has also ruled that the expense of the telegraphic establishment along the line passing through British territories shall be defrayed by the Government of India. The Japanese Government appears for the first time as a borrower in the London market, and invites the confidence of the English capitalists to the amount of one million sterling, for the purpose of constructing railways in that country.

Sheffield Architectural and Archaeological Society.—The first excursion for this year of the members of this society has taken place. A party of ladies and gentlemen connected with the society went by the new Midland line to Chesterfield. On arriving there they were conducted by Mr. Swift through the town, who pointed out objects of interest, and read a paper on the history of the town and church. The Rev. J. Stacey gave a detailed description of the church, pointing out its principal characteristics, not forgetting its curious spire, the peculiar form of which he considered to result from the action of the sun upon the green timber used in the construction of the spire. After examining the church, the party got tea together and returned home by an evening train.

Destruction of the St. Leonard's Music Hall, Shoreditch.—A fire, involving a serious destruction of valuable property, has taken place in the St. Leonard's Music-hall. The building had a frontage in the High-street, Shoreditch, and extended backwards as far as Bateman's-row. The hall had recently been entirely redecorated, and the stage enlarged. An alarm was given, and a number of fire-engines soon made their appearance. By this time the flames had taken full possession of the lower part of the hall, including the refreshment seats, property, and dressing-rooms. The firemen therefore directed their attention to the protection of the adjoining property at the back, which was occupied principally by poor families. The music-hall was almost entirely destroyed. The proprietor is understood to be partially insured. The origin of the fire could not be ascertained.

Haymarket Theatre.—For the rustic comedy called "Barwie's Book" (oddly enough misprinted in the House Bills, "Barwick's Book"), an exceedingly good landscape, outskirt of the village of Singleton, Sussex, has been painted by Mr. O'Connor. It includes a "practical" avenue at the side, very useful to the place. It is very strongly supported, including Mr. Sothers, Mr. Keudal, Mr. Buckstone, Mr. Chippendale, Mr. Compton, Mrs. Frank Matthews, Miss Robertson, and Miss Fanny Gwynne, who do everything that can be done for it, and produce an amusing result. The drawback to the piece is the little sympathy on the part of the audience that can be felt for any of the characters. They are a scheming selfish group, that must not do not touch the feelings.

The Architectural Exhibition.—The collection in Conduit-street will be opened to the public on Monday; the private view taking place on this, Saturday.

Steam Roller.—At a recent meeting of the Ipswich Board of Health, the surveyor handed in a report as to the purchase of a roller for the roads. This report embodied replies to inquiries Mr. Ribbons had made of engineers and surveyors in other towns. That of Mr. Howell, surveyor in the district of St. James, London, says:—

"There can be no doubt but in the construction of new roads a roller is of inestimable benefit: steam rollers of 10 tons are not too heavy for this work. But for the repair of existing macadam roads a roller of that weight (one of which we once had) entirely crushes the stones on the hard surface beneath. We use a roller which, empty, weighs 3½ tons; it is used when the macadam is first put on or spread. When the material begins to consolidate the roller is filled with water, which increases the weight to about 7 tons."

In conclusion, Mr. Ribbons says:—

"Taking the opinion of the above-named surveyor and engineers, I think that of Mr. Howell would answer our purpose best, and that a 3½ to 4 ton roller would meet all our requirements, the cost of which delivered in London (by Ames, Bedford, & Co.) would be 950."

It was ultimately agreed that a roller weighing 22 cwt. when empty, and 2 tons when filled with water, be purchased, which would be, including a turn-table, 500.

The Proposed Erection of Public Buildings on the Thames Embankment.—A strong opposition is being organised to the proposed appropriation of a considerable portion of the land reclaimed by the construction of the Thames Embankment for public buildings, and the subject was brought under the attention of the Marylebone Vestry, with the view of obtaining the co-operation of that board. Mr. Grosvenor, the vestry clerk, read a communication from the vestry of St. George's, Hanover-square, setting forth many objections to the erection of buildings as projected, and urging that as the ratepayers of the metropolis had paid for the Embankment, the reclaimed ground ought to be used for recreation by them, and not by the public generally. Several parochial and other bodies agree with these views, and have requested Mr. W. H. Smith and Captain Grosvenor to bring this subject before Parliament, which will be done forthwith.

Strange Carelessness.—Last week Mr. H. Ashcroft, of Preston, contractor, incautiously put the end of a cigar which he had been smoking into his pocket, in which, as he seems to have forgotten, he had previously put a sample of blasting powder. The result was fearful. Mr. Ashcroft was hurled a considerable distance by the explosion of the powder, his clothes were ignited, and he has sustained injuries which, it is feared, will result in his death. It is stated that one of his eyes is destroyed.

The Suez Canal.—A new difficulty has occurred in the practical working of the Suez Canal. The heat is so great that the stokers cannot live through it. A Sunderland steamer has arrived out in Calcutta with every stoker dead; several others have suffered severely; and nearly all that have passed through tell the same story. Climatological maps show that although neither the Isthmus of Suez nor the Red Sea is equatorial, the "district of greatest heat" throughout the whole globe is a small space which crosses the Red Sea, Arabia, and the Persian Gulf.

Wallace Glass Works.—The suffering resulting from the stoppage of these works is likely to soon be at an end, as the works are said to have lately been purchased by the firm of Chance Bros., of Birmingham. The works will probably be improved and extended. The locality of Bristol is eminently suited for the manufacture of glass, owing to the cheapness of coal and the easy access by water and rail communication, and inquiries at the present moment, it is said, are being made with the intention of erecting new works in the neighbourhood of Bristol.

A Chapel Burnt Down at Hyde.—A fire has taken place in the Congregational Chapel, George-street, Hyde. The alarm was at once given to the fire brigade, and two engines were quickly on the spot; but it was found there was no chance of saving the building, and the men confined their efforts to preventing the spread of fire to the adjoining school-room and dwelling-houses. The cause was ascertained, and the cause of the fire was unknown. The building was insured for 1,000.

The Belfast Albert Memorial.—The Belfast Albert Memorial Committee have, without any public demonstration, formally handed the tower over to the town council.

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30, George-square, Glasgow.

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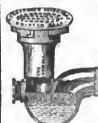
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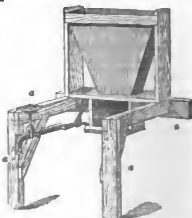
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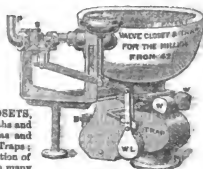
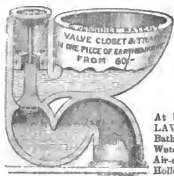
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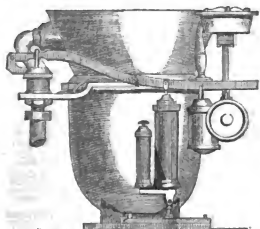
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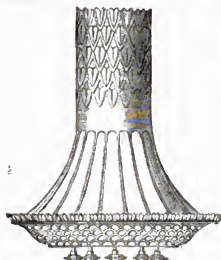
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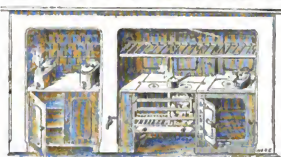
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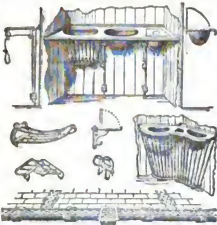
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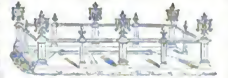
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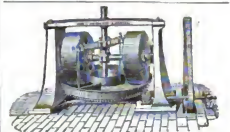
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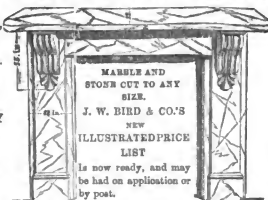
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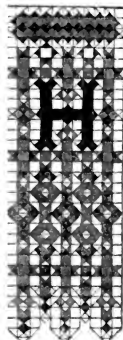
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The Builder.

VOL. XXVIII.—No. 1423.

The New Buildings for the University of London.



ER Majesty the Queen having opened the new building erected for the New University of London, this is a fitting time for saying a word as to the general merits and success of this important architectural work, of which we some time since published an elevation and plan, beside, more recently, giving a description of the illustrative sculpture which adorns it. And here let us say at once that, whatever opinions may have been passed on it by the spectators and casual critics who have noticed the building from time

to time, one thing is certain, that the real merits of the design as a whole are very much secured by its position, so close to a comparatively narrow street, and opposite to the end of another (Old Burlington-street), which is in its centre axis. Many designs of the modern school, which depend for their effect on a picturesque multiplicity and even confusion of parts, and which eschew uniformity, may produce almost as good an effect in a confined street site as on a more extended one, depending as they do on parts and not on the whole design for their effect. With a building so essentially Classical in type as the London University, and so completely regular and symmetrical in design, the case is quite different; it requires to be viewed as a whole, and to be so placed that its centre and principal feature may be symmetrically disposed with regard to other buildings or principal objects of whatever kind adjoining it. In this respect, there can be no doubt that Mr. Penethorne's new building is most disadvantageously placed for the exhibition of the design, there being, in fact, no point of sight whence the whole can be well seen at once; while Old Burlington-street gives a view, for its whole length, of one of the sides only of the centre portion of the building, deprived of its adjacent parts, and appearing in unmeaning divorce from the rest. It may be said that the architect should have designed his building for the site and for the view and aspect which it was to enjoy; but although this is undoubtedly correct as a general principle, it would scarcely have been reasonable in the present instance to expect the architect to have modified his whole design in regard to the position of a very inferior class of buildings opposite, or to have provided for a vista down a street which, whatever its former importance, is not safe from the changes which are now so continually taking place, and may for a long time take place, in the line and position of streets and street property in the centre parts of London.

In plan the University building has the great merit of simplicity and symmetry, and will not

be one of those too numerous public institutions on entering which the visitor is puzzled as to which way to go, and where to discover what he wants. After crossing the vestibule, we find ourselves in a central hall, with the principal staircase immediately before us, while on each hand open two wide corridors leading to the library on the right and the theatre on the left; smaller rooms for other purposes opening from these. These corridors are sufficiently lighted from skylights at each end, and from the light which is obtained from the large lantern over the central staircase which adjoins. The large library is also, as we understand it, to be the public examination-room, and adjoining it are two smaller examination-rooms, which, as well as the Professor's rooms, are reached by a transverse corridor crossing the end of the longitudinal one. A similar transverse corridor at the west end of the main one gives access to the two entrances for spectators into the auditorium and gallery of the theatre, and at the end to another examination-room, from which a flight of stairs descends, giving access to the dais or platform of the theatre; so that this room can be used as an ante-room for those who are to occupy the platform at the prize deliveries or on other important occasions. Whether it is quite desirable to have no separate access to the platform except through this room must depend very much on the working of the institution and the special uses to which the theatre and the room adjoining it are put. The centre staircase is wide and spacious, with a heavy coloured marble balustrade and balusters of white marble of somewhat thin and meagre design. The planning of the balustrade on the first floor landing, where it is turned away from the head of each flight of steps in a quarter-circle, is a good idea, giving a look of spaciousness to the upper landing, and might be well adopted, on practical grounds, in some places where there is more likely to be a crowd on the stairs occasionally than seems probable in this case. The stairs are carried on a constructed arch forming a good feature. On the first landing of the principal stairs is a niche and pedestal, opposite the lower flight, for the present occupied by a plaster cast of the Westminster Abbey statue of Shakespeare, but eventually to be filled, it is understood, with a marble statue of the poet. On each side of the niche are doors leading to reading-rooms, in what would be in the front a mezzanine; but the back elevation, which can only be seen from the roof of the Royal Academy, is innocent of orders or mezzanines, and quite independent of the front design. These reading-rooms are over the Professor's rooms, which are reached, as we said, by the western transverse passage. On the first floor, and occupying the centre of the front portion of the building over the vestibule, is the amate-room, 45 ft. by 38 ft., and nearly 30 ft. in height; adjoining this are less lofty committee-rooms. The east and west wings are occupied in this floor mainly by the upper portions of the theatre and library. We must mention that the theatre is a very handsome apartment, and will accommodate on the floor and in the gallery 900 persons. If we may judge from a passing trial, it is successful in point of acoustics. Statues of four of the Muses ornament the lecturer's side of the theatre. The rooms for servants and officials living on the premises are reached by a distinct and separate staircase at the back, running from the basement to the attic story, as much as possible shut off from the other portions of the building. A similar staircase is appropriated solely for access to the anatomical dissecting-room and laboratory, which are over the western smaller examination-rooms, and lighted from the roof. The laboratory, or chemical room, is fitted up with great completeness, each student having presses, basin, and water to his hand. The pipes from the basin are of earthenware, to resist the action

of chemicals. A "stink closet," in various divisions, is provided for dealing with offensive fumes; and there is a large air-shaft over the top of the room, controllable with dampers, to meet different requirements. From the back staircase access is gained to washing places, urinals, and other conveniences; the accommodation in this respect appearing to us to be rather under than over the mark.

And now to speak of the building as a work of architecture, independently, to some extent, of practical considerations. We must admit that much of the detail is of what is now called and considered "old-fashioned;" that is to say, it is not the style which is in vogue just now, and does not show sufficient individuality and originality of treatment to compel admiration in spite of fashion, although far more thoughtful and artistic than much of the Gothic architecture of the present day. The style is Roman, with

"Perhaps some modern touches here and there;"

which, however, would not in themselves be sufficient to

"Redeem it from the charge of nothingness."

were it not for the originality and breadth of treatment shown in the general design. The reader will understand our remarks better if he refer to our illustration of the elevation. The treatment of the wings, which each contain an apartment necessarily lighted mainly from the roof, is very good and original, and furnishes a suggestion for the treatment of wall space when we are so compelled to dispense with windows. The heavy rusticated basement here gives the idea of security and stability, while contrasting well with the more ornate cornice of the building, and the portion above the first string-course or cornice is broken up by coupled columns and niches for statuary, which here supply the expression and life to the wall which otherwise is obtained from windows. These statues, and the sitting statues on the centre porch, have been before described and catalogued in our columns. The centre front is perhaps scarcely so happy in treatment as the side. The lower portion is occupied by the projected portico just mentioned, with heavy square piers and circular arcade, having in the main a very satisfactory appearance. But the odd little "altars" (for such they look) which rise above the cornice of the portico at each outer angle, and form the finish to the massive angle piers, are not a successful feature; and it is just here that we would have liked to see sculpture: had these erections, made perhaps a trifle larger, culminated in a good group of sculpture, there would have been some reason for them, and the sculpture would have had more point and effect there than distributed in detached figures along the cornice of the portico. The only valid explanation that can be given for these features, is that they are intended as a kind of repetition or echo of the clock-tower of a somewhat similar square form which occupies each extremity of the centre above. One of these towers, which each have a dial of the same size, is intended for an anemometer, the other (the eastern one) for a clock; and it is this latter, with its round white expanse of clock face, which shows so curiously to the spectator walking down Old Burlington-street, with a high building on one side of it, and a low one (the east wing) on the other. The front above the portico shows the single three-quarter engaged column with entablature breaking round the head of each, and a statue carrying up the line above, which we know so well in this style of design, and which has the disadvantage, especially when seen in perspective, of cutting up the front of a building into series of vertical strips.

Internally, the most important feature architecturally is the principal staircase light, which consists of coupled circular-headed windows below the cornice, with a shaft as a centre mullion, divided by a group of shafts on brackets,

from which spring the ribs of the coiled vault which forms the base to the skylight. These shafts and windows have a slightly Romanesque touch about them, and are in a purely Classic in feature than anything else in the building. The first-floor landing, or gallery, is laid with a simple, but effective, design in marble for the flooring, exceedingly well executed. Beyond this there is not much to notice artistically in the interior. The pilasters carrying soffits and arches in the ground-floor corridors are of a good type; but there is a somewhat commonplace plaster flower introduced on the pilaster and along the cornice above the astragal, which had better be known to be painted on, so easily done, and the plaster made good again. We noticed with pleasure a very good and simple design of wooden bracket in the library, for carrying the landing to the upper book-cases; and saw with reverent feelings, at the east end of the principal corridor, three plain wooden pedestals, of 1-1/2 ft. in its naked state, waiting for the painter to throw a veil of decency over it. Why do architects allow this sort of thing? If they cannot afford a stone pedestal in a niche, let the wooden one look like a wooden one, and be treated accordingly, instead of putting up a wretched bandbox to be painted "stone colour." The designs for the iron entrance-doors, and the gates and iron balustrades of the portico, are open to the objection that they are too realistic and too elaborate in that kind of surface-work which can never be well represented in cast iron. "Carving" and "casting" are two very different things, and the one should never simulate the other, as is done with regard to the latter, at least, in ninety-nine cases out of a hundred.

In respect to these matters of truthfulness in construction, and in the use of material, a good deal is owing to the recent study of Gothic work, and it is in such things that architects like Mr. Pennefather, whose education no doubt taught him to tolerate many things in this way which the present rising generation of architectural students are taught religiously to eschew, might take hint. But how many of the new school would have given to a building so simple and sensible in plan, and with so much of dignified repose in general design and outline, as this? We have stated pretty freely our opinion as to the defects of this building, partly because it has been somewhat ignorantly praised, and partly because we may further say, *en passant*, that the introduction of the red Mansfield stone for columns and in other places, which has been much lauded as an attempt at polychromatic effect, is wanting in effect even now, and a few years of smoke and weather must obliterate all trace of it, save what difference of texture may afford on a close inspection. But with all minor defects, we believe we may congratulate Mr. Pennefather on having erected a building which no dispassionate architectural observer will pass without noticing it as evidently the work of a thoughtful and refined architect, and showing no small originality without a shade of grotesque or out-of-date. As it now stands, the building will never really have fair play; and the interior wants very much the colouring which we understand is sooner or later to be applied to it: ceilings consisting of white plaster panelling are not attractive to the eye; nor can we help regretting that in a building of this magnitude and importance, some steps were not taken towards a more purely architectural treatment, instead of corridors and, perhaps, of one or two principal rooms, by the use of brick and tile lining, at least of that external plaster with regard to the exterior it may confidently be said that, with a better position, leaving a clear space of 50 yards or so in front of it, the whole composition would come out as one of great dignity, with, perhaps, a little too much of squareness of form, but expressing in an exceptionally successful manner the nature of the purpose for which it has been erected.

We should mention that Messrs. Jackson & Shaw are the general contractors for the work, which has been carried out under the superintendence of Mr. Warburton, as clerk of the works. The walls throughout the interior are rendered with Martin's cement.

Our remarks as to external design have had no reference to the back portion of the building, which, as we said, is not seen by ordinary passers-by, but might as well have been in something the same style as the rest, instead of in a variety of Italian Gothic and Renaissance windows. This curious, hermaphrodite character, it should be explained, arises from the fact

that the building was originally designed in a different style, and a portion of it then erected was retained to form the rear of the present structure.

ARCHITECTS AND THE GOVERNMENT.

Many meetings of members of the Institute of Architects have been seen so numerous, unanimous, and determined as was that which was held on Monday evening last, to consider:—

"Whether any and what steps should be taken by the Institute in reference to the subject of a recent correspondence (under the name of the House of Commons, April 4th, 1870), between Mr. E. M. Barry, R.A., and the First Commissioner of Works, respecting Mr. Barry's course as architect of the New Palace of Westminster, and in reference to certain communications on the same subject received by the Council from Architectural Societies in Scotland, Ireland, and the provinces."

The new president, Mr. T. H. Wyatt, took the chair for the first time, and let us read from Mr. Sidney Smirke, R.A., and other leading members of the profession unable to attend, expressing strong opinions on the subject, and offering subscriptions to defend the right of the profession to retain their drawings. The resolution of the council, passed on the 14th of March last, in which "the council express their most decided opinion that the rule and custom of the profession is, that all the drawings and papers of an architect prepared for the purpose of erecting a building are, and remain, the sole property of the architect," was confirmed by the meeting, and the president said:

Letters were read from various Architectural Societies, in further confirmation of the opinion conveyed in the above resolution, and in support of Mr. E. M. Barry's right of ownership to the drawings and documents prepared for the erection of the Houses of Parliament. From the Royal Institute of Architects of Ireland, the Glasgow Architectural Society, the Liverpool Architectural Society, the Manchester Society of Architects, and the Birmingham Society of Architects, which have already appeared in our columns, or are printed in the present number. The two subjects, namely, the treatment received by Mr. Barry, and the right of architects to retain their drawings, were then discussed with great fulness, and the following resolutions were passed unanimously:—

"1st. That it is fitting and indeed necessary for the Institute to maintain a national monument to the fact that they should be always under the superintendence of professional men of independent position and high standing, and to maintain their educational character."

"2nd. That the custom of the profession has uniformly been, that the ownership of drawings and other documents, prepared for the execution of buildings, rests with the architects employed."

"3rd. That a copy of the above resolution be forwarded to all the members of both Houses of Parliament, and that the widest possible publicity be given to the same."

"4th. That a committee be appointed, to consist of the president, vice-president, and such other members of the Royal Institute of British Architects as they may think fit, and that they be authorised and requested on the part of the said Institute to support and to urge upon Her Majesty's Government either at intervals, by correspondence, or otherwise, the views expressed in the previous resolutions; with power to convene future special general meetings for further consideration of the subject whenever they may see fit."

"5th. That a vote of cordial sympathy with Mr. E. M. Barry be transmitted to that gentleman."

"6th. That he be encouraged by the expression of such sympathy to resist to the utmost the unprecedented demand made upon him; and that, in the event of expenses being incurred with reference thereto, in trying at law to establish his rights, any amount may be raised by the First Commissioner, this meeting pledges itself to promote the raising a guarantee fund for the same."

It was afterwards resolved that the Prime Minister should be requested to receive a deputation from the Institute on the subject of Mr. E. M. Barry's case.

In the course of the discussion a large amount of evidence was given, proving the custom of the profession as to the retention of drawings. The following gentlemen took part in the proceedings:—the President; Sir William Tite, M.P., Sir Piggy Wyatt; Messrs. Ashpitel, A. Allom & Co., Chas. Barry, Bolton, Professor Donaldson, Edin. B. Perry, Ferry, Geo. Godwin, O. Hammond, C. F. Hayward, Jennings, Horace Jones, Professor Kerr, F. Marnane, Newton, Penrose, K. Roberts, Seddon, and others.

We have read with regret, amounting, indeed, to sorrow, the leading article on this subject in the *Times* of Thursday, an article founded on want of precise knowledge, and inspired, it would almost seem, by a desire to disparage and degrade an important and laborious profession, and to look for other treatment at the hands of the *Times*. When the writer, composing the Institute with a body just now suspected of

having attempted to commit murder, says "the United Brickmakers demand that brickmaking shall never be made any cheaper; the Associated Architects maintain that an architect always had, and always ought to have, the privilege of getting paid for goods without delivering them," he says what is not correct. An architect is not paid for his drawings; he is paid for the abrogation of a building; and whether he do this by means of drawings or without them does not concern the client in the least. Feeling probably the weakness of the position, the writer rests his argument on the necessity of possessing drawings showing the design and detail—drawings which Mr. Barry has never refused to give. We are unable to pursue the matter further at the moment of going to press, and can only add that Mr. Gladstone has consented to receive a deputation this, Friday morning, who will, at any rate, be able to show to him the unanimous feeling of the profession against the course which has been pursued with respect to the architect of the Houses of Parliament.

THE COMMISSIONER OF WORKS AND MR. E. M. BARRY.

INSTITUTE OF THE ARCHITECTS OF IRELAND.

A SPECIAL Council Meeting of the Royal Institute of the Architects of Ireland has been held, to take into consideration the demand made by the Chief Commissioner of Works for delivery of plans. A statement was addressed to the Council of the Royal Institute of British Architects, expressing strong sympathy and interest in Mr. Barry's case by the members of the profession in Ireland, and the anxiety of the Irish Institute to co-operate with their English brethren in resistance to this or any other encroachment on a uniformly of practice hitherto by the institution of legislation, existing in the profession on both sides of the Channel. It was further stated that the rule of the Irish Institute was identical in expression with that of the rule of the Royal Institute of British Architects issued in 1862, having been adopted in 1863 as properly and correctly stating the practice and usage of the profession as heretofore existing in Ireland.

It was further said that claims by clients for the delivery of plans had rarely been made on members of the Institute, and that in a few cases where such claims had been set up, backed by the institution of legislation, proceedings, such claims had, under the advice of eminent counsel, been resisted, and no further attempt made to prosecute them.

It is satisfactory to learn that a thorough uniformity of practice prevails among architects both in England, Scotland, and Ireland; and it would be desirable that before any revision of the scale of charges and statement of practice, a conference should be organized.

THE GLASGOW SOCIETY.

The Hon. Secretary of the Glasgow Architectural Society sends us the following extract from the minutes of a meeting of that society recently held:—

"It was resolved to write to the Royal Institute of British Architects, stating that the society practice in this district to regard drawings as the property of the architect, and that this principle is always adhered to in Glasgow."

"WHO SHOULD KEEP THE DRAWINGS?"

It is manifestly a fortunate though fortuitous circumstance, that the uniformity of practice, whether architect or employer should retain the drawings of executed edifices, has arisen on a public instead of on a private matter. Abstract right is one thing, but the law of this realm is another thing. About such law touching the drawings there appears to be but the same opinion. The custom of builders retaining drawings has been practically recognised by clients for centuries. Established custom is law. If it were not, English courts would soon be in hopeless confusion. They are governed by statute, or written, and by common, or unwritten, that is, customary law, and the former is as binding as the former. Mr. Ayrton's claim thus roots up common or customary law, and shatters the foundation of property. If endorsed, what is to become of "customary freeholds," the customs of manors, &c.? But it is needless to expand.

With regard to statute law, some of the Acts of Limitation or Prescription may possibly apply to the period when Sir Charles Barry pre-

pared many of his designs; but we have chiefly to deal with common or customary law. It is yet to be seen whether we have in the present First Commissioner of Public Buildings not merely a sound lawyer by profession, but a liberal and enlightened statesman, capable of appreciating, as it was appreciated even two thousand years ago, the importance of the fine arts in conducing to the civilisation of the people. For such is the point involved,—the just, respectful, and generous treatment of distinguished artists, in order to foster useful, true, and great artistic efforts. The public should understand that this requirement of the drawings is not merely a question of economy, for ninety-nine out of a hundred are useless in their disposition, and Mr. Barry offers copies of all that may be essential; but it is one of justice,—whether, after an architect has erected an edifice, he must, contrary to all usage, forfeit his means and appliances. A lawyer prepares a deed, a surgeon performs an operation, a sculptor produces a statue,—all retain their draughts, instruments, or models; plainly because they are not the thing done, but only ways and means to the end. The same steps and measures subserve to the required result. On analogous principles, an architect keeps his drawings of executed works; and he will probably be long have even more than their possession, namely, copyright in them.

EDWARD L. TABBUCK.

TREATMENT OF ARCHITECTS.

SIR,—I have no doubt you will be sorry to learn that Mr. Ayrton, First Commissioner of the Board of Works, is to appoint another great mistake, and to appoint a clerk of works, an architect and surveyor, to the county courts, at a salary of from £600, to £700, per annum. It is a great mistake of the profession, and it is a great mistake that they do not institute a Parliamentary inquiry into the abuses at the Board of Works. Surely every architect is entitled to demand that his buildings should be entrusted to competent persons who possess the qualifications of architecture, so that we may no longer be "a mystery among nations." Is there no one amongst these professional assistants in the Board of Works better qualified than a clerk of works to design architectural work? or is it a fact (which many say), that the possession of talent is a bar to promotion in the Civil Service? I am inclined to think that such is the case, as the grossest mistake has been made out of late in the learned in architecture at the Board of Works. For instance, the removal of Mr. Layard and Mr. Ferguson, while Mr. Pennington, a veteran in the profession, and Mr. Edward Barry have been succeeded by Mr. Trollope, an architect since a carpenter in the employment of Mr. George Smith, the contractor, whose claim to rank as an architect he has yet to prove. We may now expect to realise the dream of many a type,—a new style of architecture.

A LOVER OF ARCHITECTURE.

P.S. I have just ascertained that the clerks of works belonging to the Board of Works were to be twelve in number and six in each, by the Civil Service Commissioners, on the knowledge of building materials, construction, and taking out quantities, their knowledge of the art of architecture, being considered to be of no consequence, was taken for granted.

THE DECORATIVE ART OF JAPAN.

The glances which we have been enabled to take, from time to time at the state of art-education in this country, as well as on the Continent of Europe, have led to the conviction that, however we may regret the want of due encouragement of the highest forms of art amongst ourselves, we are actually providing a school of decorative and industrial art which has produced much, and which promises more. Leaving aside, therefore, for the moment, the comparison of the present state of art-education of the unity of art, and looking at the practical question how best to stimulate the exertions, and to improve the results, of our actual schools, within the limits to which they are at present restricted, it becomes a matter highly important to the national welfare to inquire in what localities, and to what masters, we are to look for instructive and improving examples of decorative art. We do not doubt that those opportunities of study have been such as to acquaint them with the subject, will at once ascertain that we are about to speak of Japan.

It is, indeed, to Greece, in the age of Phidias, that we invariably turn for the noblest examples of the highest forms of art. That this excellence was not confined to plastic art alone, we have the unique and masterpieces, the treasures of the "Museum of Corcoran," a Greek painting, discovered, comparatively lately, in Italy. In the decoration of the vases of Greece and of Magna Grecia, the historic development of which we may, to a very great extent, trace in the noble collection exhibited in the British Museum, we see rather the exuberance of the art-institut, as displayed in the work of the potter, than the re-

sults of the demand for luxurious taste for seasons ornamentation. Among the fantastic bronzes in the Italian museums are to be found the *chefs d'œuvre* of all human art. Coins of rare beauty attest the unrivalled excellence of the Greek die-sinkers; and *inlay*, and even *cameo* gems, such, for example, as those signed by Pyrgoteles, are the masterpieces of an all but extinct mystery of the cunning of relief.

The art of Greece is of that nature of which it is said, with truth, *nascitur, non fit*. While the artist who attempts that which is most noble will ever seek inspiration and instruction from the cradle of genius, any endeavor to reproduce classic forms in their purity, in the present century, is likely to result, as it generally has resulted, in failure. We may spell a certain number of words with a K instead of with a C, without imbibing, by that or by any similar methods, any portion of classic inspiration. The style of the school of David, essentially artificial as it was, is fading from the French academies; in spite of the political reasons which dispose so large a portion of an impulsive nation, toward the bold, original, and free republicanism in sculpture. The effect of an exclusive study of classic forms,—of the second-hand study of nature,—in starving the mind, and in impoverishing the hand, is illustrated in a remarkable manner by the works of Flaxman. No artist in modern times had a purer taste, as far as taste could be formed by the love and study of the antique. His power of bold, original, and faithful drawing is evinced by his Italian note-book, full of masterly and admirable sketches of Italian art. Unfortunately, it was the dry bones of the past alone, that this artist found in Italy. He wandered through districts in which, even at this moment, female beauty may be almost called divine, without sketching, so far as his book is evidence, a single exciting model of nymph, or goddess, or virgin. Every scrap of Roman sculpture,—poor, ill-drawn, and harsh as these relics often are,—had a greater charm for his eye than the lithic forms of the women of Seana, or the almond eyes of the girls of Lecco or of Brindisi. The natural, necessary result of this indifference to the mundane source of the Greek ideal, is to be seen in most of Flaxman's designs. Of the large number of sketches never displayed in the Loan Collection at the South Kensington Museum, there was hardly one which an artist acquainted with living Italy (if she can be said to live), would care to copy, or even to possess, except as an autograph.

Admitting, as we must do, that the tone and temper of the day are not such as to allow us to expect the very proximate introduction, into this country, of the classic art-education which is attempted by more than one Continental government, it is evident that, in order to make the best of the education actually given, we must not hold too closely to Grecian models. As a mode of instructing both eye and hand in precision of form, and to a certain extent, as a mode of forming and purifying the taste, the wiser method of copying, alternately, from the antique and from life, which has been introduced into our schools of art, is admirable. In this particular (and probably in this alone) Continental schools may take a lesson from our own; but so long as our national education is directed to the formation, rather of the art-workman than of the artist proper, we ought to look eastward of Greece for the source of his inspiration.

The tendency of the human mind, especially during the time when knowledge is but in the course of acquisition, to mistake a principle for the principle, is normal and constant; this evidence of partial and imperfect education is constantly out-cropping in art. It is the origin of most so-called "schools." It erects into distinct academies these minor divisions which ought to be only "forms" in one great, harmonious university of art. It speaks of the conventional, the realistic, and the ideal, as if any true art could exist which did not combine the three. But it is not falling into this vulgar error to insist that the conventional element must preside over the department of decorative art. That point admitted, it follows that examples, invaluable for the use of our industrial schools, may be furnished by the artists of Persia, of China, and of Japan.

It is in the art-works of these countries that we find at once the most perfect treatment of colour, as to harmonious blending, and the production of the effect of richness without gaudy vulgarity; and the most adroit management of geometric or arbitrary form in contrast to the flow and freedom of natural outline.

Japan may be regarded as the locality in which the most valuable discoveries in living art are now to be sought. Its civilisation, as peculiar as that of China itself, differs from that of the flowery land, not only in its artistic, but in its historic, characteristics. The most valuable productions of the special craft which takes its name from China, date from the age of the Crusades. The most rare and precious of the various species of Chinese porcelain, fragments of which are now treasured and worn as gems, the azure crackle, was fabricated under a dynasty which ascended the throne more than a century before the Norman Conquest. The most delicate egg-shell china, thin as bamboo paper, was produced early in the sixteenth century. The rage for cheap production, extending from our shores to the antipodes, has had the same fatal effect on the porcelain of China, that it has had on the iron of England. Modern productions, apparently of "hard paste," are made to sell, and not to endure; and a collection of valuable porcelain is now as rarely to be met with in China as a chest of good tea—of which both but the cheaper qualities have fallen into absolute neglect in those districts which supply the English market.

But in Japan, so far as our limited acquaintance with that unique country extends, no signs are to be traced of decadence in art. Europe is only beginning to awaken to the vigorous life and the remarkable originality of the Japanese artist. It is true that we have long been acquainted with specimens of their rare craftsmanship. The name of Japan, most inappropriately bestowed on the grim black point, or the shining, splately, brown varnish, with which we decorate those iron boxes which are the pride of the legal profession, has been long cited as descriptive of that peculiar lacquer, of which we know little, save of two inferior kinds, the black and the red. Of the true distinctiveness of their peculiar manufacture, ranging as they do, from the gold lacquer, bright in all colours from that of fire to that of the rose itself, through the hues of aventurine and of tortoise-shell, to that vermilion paste (formed of fibres of artesonous plants, bamboo paper, calked small-shells, and oil of camellias), which can be carved and shaped like wood, little more than the names are known. One of us is aware that not only wood, but china and metal, are enameled with the precious lacquer of the Japanese. Here and there an amateur has picked up one of those rare little cups, Chinese, it may be, or Japanese, in its porcelain lining, the outside of which has been covered by the patient toil of the latter race with a web of wicker, delicate as lace, and which, if it were a portion of the earthen fabric itself.

The descriptions of produce which are known to be wrought, with unrivalled excellence, in Japan, include so large a range in industrial art as to suggest how wide a field, and that by no means unoccupied, must lie between. In variety, and in excellence of adaptation for widely different purposes, there are no papers like those of Japan. No European silversmith, bronzist, or other worker in metal can emulate, or can altogether comprehend, the wonderful chasing, inlaying, tinting, and inexplicable transforming of metallic substances, effected by the Japanese metal-workers. Japanese porcelain has a style of its own. Wicker-work and bamboo-work of all kinds are employed, from the floor and roof of the houses to the outside of the tea-cup. Of lacquer we have spoken. No country of Europe possesses so many specimens of Japanese work as does Great Britain. Her Majesty the Queen has given and has lent to the South Kensington Museum, valuable specimens of China and of other industrial productions, including most curious grotesque groups in ivory. Up to the close of 1867 the Museum had acquired 184 specimens of Japanese art, of which forty were carvings in hard wood, ivory, or bone, twenty were specimens of arms and armour, fifty-four were objects of a textile fabric, and an equal number represented the porcelain of the country.

Japan was not represented at the Paris Exhibition in a manner worthy of her artistic eminence. A few articles of the forests of the country, filled a single case. They consisted of fibrous substances, such as palm-leaf sheaths, out of which fine sweeping-brooms are made; wooden tooth-brushes, charcoal of the tree fern, palm fans, neat wooden boxes, sandals, shields, baskets, and ornamental articles, made from rattan cane, large bamboo stems, and the bark of the *Broussonetia papyrifera* and other trees.

experience of the few residents who know anything of the inner life of Japan. Foreigners who go to teach these gentlemen (who are, as matter of literature, fully up to our most recent improvements) must be prepared to carry their lives in their hands.

THE PUBLIC HEALTH IN THE FIRST QUARTER OF 1870.

THE Registrar-General has published his Quarterly Return of Births and Deaths in the first three months of this year, in which, anticipating any recommendations which may be contained in the long-expected Report of the Sanitary Commission, is now given for the first time a mass of information in great detail, which cannot fail to be of incalculable value to the sanitary authorities throughout England and Wales. The country for registration purposes is divided into 2,196 sub-districts, each with a registrar. The average area of those sub-districts in 1861 was rather more than twenty square miles; they contained on an average about 1,700 houses, and rather less than 10,000 inhabitants. The quarterly return now gives for each of these sub-districts not only the births and deaths registered in the three months ending 31st March last, with the marriages for the previous three months, but the deaths of infants under one year, those of persons aged sixty years and upwards, those referred to each of the seven principal diseases of the zymotic class, those resulting from violent causes, those registered upon the information of the coroner being inquest cases, and those recorded in the large public institutions, for the most part work-houses and hospitals. To those thoughtfully interested in sanitary matters it is needless to point out in how great a variety of ways this information may be turned to practical account by local authorities, at the same time adding, to any one who cares to study the returns, a good general view of the proportionate fatal prevalence of zymotic disease in the various parts of England and Wales down to so recent a date as the 31st of March last. The Registrar-General states that he is unable to vouch for the absolute correctness of the figures in the Quarterly Report, as it is compiled from the individual returns of the 2,196 registrars, to very many of whom the general view of the causes of death has been a new and somewhat difficult task. The facts are doubtless in the main correct, but the actual figures must be regarded as provisional, and subject to revision in the Annual Report for 1870, which, however, cannot be looked for before the end of 1871 at the earliest. In the meantime, this information, even with its percentage of inaccuracies, cannot well be regarded as of little value.

The winter of 1869-70 was a long and trying one, resulting in a mortality considerably in excess of the average. The mean temperature of the first three months of this year was 36° Fahr.,—1° below the average of twenty-nine years, and lower than in any corresponding period since 1865, when it was only 36°. The mortality in the first quarter of the year rises in singular uniformity with the fall of the mercury in our thermometer, and it is not surprising therefore to find that the national death-rate last quarter was higher than in any corresponding three months since 1865. The remarkable alterations of temperature during last quarter, especially in March, had probably more direct influence upon the death-rate than the fact of the mean temperature being below the average for the quarter. From the 4th to the 15th of March the daily temperature averaged a deficiency of 31°; on the 16th, 17th, and 18th there was an average excess of 61°; and from the 19th to the end of the month a deficiency again of 51°. Those three warm days doubtless rendered the succeeding spell of cold weather still more fatal to those suffering from affections of the respiratory organs than it would otherwise have been.

In the first three months of this year both births and deaths in England and Wales very considerably exceeded the average numbers in the ten previous corresponding quarters, after due allowance for increase of population. The natural increase to the numerical strength of the people during the quarter, as represented by the excess of births over deaths, was 62,451 against 70,618 in the same period of 1869; the births showed an increase of 2,866, but the deaths were more numerous by 10,553. The annual birth-rate last quarter was 38.1 per 1,000, and higher than the rate in the first quarter of any of the

last ten years, the average for which was 37.0. The annual death-rate in the whole of England and Wales last quarter was 26.5 per 1,000, against 23.3 and 24.8 in the same period of 1868 and 1869, and 25.3 the average of the ten first quarters of the years 1860-9; in these years the death-rate which prevailed last quarter was only exceeded in 1864 and 1865. The excess of mortality in our urban population over that prevailing in our rural districts was considerably below the average last quarter; the average excess in the first quarters of the ten years 1860-9 was 5.3 per 1,000, while in the quarter under notice the death-rate in all the chief towns averaged 27.8, and was 24.9 in the rural and village population, showing an excess not above 2.9. It is thus evident that the principal excess of deaths last quarter occurred in the country districts, but without a careful analysis of the causes of death (which is not yet possible), it would be hazardous to pronounce how much of this result was due to the more direct influence of the low temperature and sudden alternations on the rural population, and how much to an improved sanitary condition of our towns, which may to some extent have therein counterbalanced the unfavourable climatic conditions.

The average, however, of the year results in the annual death-rate last quarter of our entire town population (roughly speaking, about half the population of England and Wales), amounting to nearly three per 1,000. This excess, which is beyond doubt amenable to sanitary control, is important enough to command the earnest attention of all humanitarians. This excess of three per 1,000 during the year results in 30,000 deaths in our town districts over the number who would die if the death-rate did not exceed that of the country districts. As a matter of fact, the average annual excess of the town over the country death-rate in the ten years 1860-9 averaged 4.6 per 1,000. Let us endeavour to trace this excess of town mortality within smaller limits. The death-rate in the entire urban population last quarter was as above stated 27.8 per 1,000. In the seventeen largest English towns, furnishing weekly returns, including London, and comprising an estimated population of about 61 millions, the death-rate last quarter was 27.1 per 1,000, and scarcely higher than in 1869. In the fifty towns ranking next in size, with about 21 millions of population, and including nearly all the towns the inhabitants of which number between 25,000 and 100,000, the death-rate did not exceed 26.7. If, then, in 8½ millions of our town population the death-rate last quarter was sensibly below the rate for the whole urban districts, it appears fair to assume that an undue excess occurred in the death-rate prevailing in the 21 millions inhabiting the smallest towns. The reasons probable when we consider that there is the force of public opinion has produced liberal sanitary reform in nearly all the large towns for which the Registrar-General has published periodical returns of mortality; whereas, in many of the smaller ones, for which the vital statistics are not so readily attainable, much ignorance and apathy still lingers as to their true sanitary condition. The new form of quarterly returns will probably do much to remove the former and to stimulate the latter of these two dangerous shortcomings.

Among the seventeen largest English towns, including London, for which the Registrar-General now publishes weekly returns, the annual rates of mortality, during last quarter, per 1,000 of their estimated population, ranged in order from the lowest, run as follows:—

Sunderland	21.9	Leeds	25.6
Nottingham	21.4	Nottingham	25.6
Leicester	23.8	Norwich	27.7
Birmingham	24.0	Sheffield	28.3
Bristol	24.1	Sheffield	28.4
Wolverhampton	24.3	Salford	29.6
Porthsmouth	28.0	Bristol	31.7
Sheffield	28.7	Manchester	32.7
Newcastle-upon-Tyne	26.0		

Most of these rates showed an increase upon those prevailing in the corresponding quarter of 1869, the largest increase appearing in Manchester and Salford, and in Bristol. In contrast to the generally increased rates, those in Newcastle-upon-Tyne, Hull, Sheffield, and Liverpool, showed a satisfactory decline. The annual death-rate in the quarter from the seven principal diseases of the zymotic class, ranged 17.7, 18.1, 20.0, 20.0, 20.0, 20.0, and 20.0, in Norwich, Leicester, and Sunderland; to 4.8 in Bristol, 5.0 in Portsmouth, 6.2 in Manchester and Salford, and 6.9 per 1,000 in Sheffield. This throws considerable light upon the excess of the death-

rate in many of the above towns. Scarletina was the most fatal of these diseases, especially in Sheffield, Liverpool, Leeds, and London. Whooping cough was also particularly prevalent in Manchester and Birmingham. The range between the death-rates in Manchester and Birmingham last quarter was large, but scarcely larger than usual. Manchester people may well ask why this state of things should continue.

In the list of the fifty large English towns ranking most in size with the seventeen above enumerated, the death-rates last quarter were lowest—17.5 in Birkhead, 20.0 in Southampton, 20.1 in Coventry, and 30.5 in York; they were highest—33.2 in Bath, 33.4 to Shrewsbury, 33.6 in Stockport and Cambridge, 36.0 in Blackburn, and 37.6 in Exeter. In the latter city the deaths exceeded the births, and were 78 above the average of the three previous corresponding quarters.

The information now given for the first time bearing upon the ages and causes of death will become infinitely more valuable when comparison becomes possible with a series of corresponding quarters; the following deductions are, however, interesting. Of all deaths registered in England and Wales last quarter 22.6 per cent. were of infants under one year, and 26.2 per cent. of persons aged sixty years and upwards. The proportion of deaths of children under one year, to births registered, affords on the whole the most satisfactory means of testing infant mortality in different populations; this proportion was 15.8 per cent. in the whole of England and Wales, while it varied from 13.8 per cent. in the north-eastern and 14.0 in the south-western counties to 16.9 in the north-middle, and 17.8 in Lancashire and Cheshire. The proportion of deaths of persons over sixty years of age varied still more remarkably from only 18.9 per cent. in the manufacturing population of Lancashire and Cheshire, to 34.7 and 38.6 per cent. in the agricultural counties of Norfolk, Suffolk, and Essex, and of Devon, Somerset, and Cornwall. Two causes are operation which may help to produce this result. In the first place, the continued migration of the younger portion of the adult population from the agricultural counties to our manufacturing town centres, leaves behind an undue proportion of elderly people; and secondly, the severities and shifting temperature of our winter climate are more fatally felt in our rural districts, where the dwellings of the poor are less substantially built, and in less sheltered situations, where firing is for the most part dearer, and where low wages render the labourers less able to clothe and feed themselves in a manner to resist the cold winds and frosts than their town brethren. Thus may very probably be explained the large percentage of deaths of elderly persons in the rural districts during the winter, from bronchitis and other affections of the respiratory organs.

As to the causes of death, more than 20,000 fatal cases of the seven principal diseases of the zymotic class were registered last quarter in England and Wales, including 6,693 of scarlatina, 4,448 of whooping cough, 4,178 of fever, 1,922 of measles, 1,748 of diarrhoea, 710 of diphtheria, and 400 of small-pox. Scarletina was proportionally most fatal in London and Yorkshire of the large registration divisions; whooping cough in London and Lancashire; fever in Lancashire and Yorkshire; and small-pox in London, the home counties, Lancashire and Yorkshire. Nearly 7,000 deaths in the quarter were registered upon the information of the coroner, being inquest cases; nearly 3,000 were referred to different forms of violence; and over 12,000 were recorded in the large public institutions of the country, including principally workhouses, hospitals, and lunatic asylums. In the seventeen large towns the proportion of deaths from violence to total death last quarter varied from 1.4 per cent. in Sheffield and Portsmouth, to 5.3 in Liverpool, and 6.6 per cent. in Birmingham.

In the latter town no less than 13 per cent. of the deaths were inquest cases; and of these nearly half resulted from violence, the remainder being for the most part sudden deaths from natural causes. Why the proportion of these deaths in Birmingham should be so much higher than in the other large manufacturing towns it is difficult to say. The proportion of deaths in the large public institutions in the seventeen large towns ranged from 6.7 and 7.3 per cent., in Leeds and Sheffield, to 15.2 and 16.5 per cent. in Manchester and London.

Space will not allow us to do more than this slightly to sketch a few of the most salient points

in the Registrar-General's new Quarterly. We hope, however, that enough has been said to prove to these interested in sanitary matters that these reports will be found to afford every reasonable facility for obtaining prompt and reliable information as to the condition of the public health in all parts of the country. We anticipate that a very general stimulus will be given to the public interest in sanitary and hygienic matters by the publication of these returns in such useful detail.

THE ARCHITECTURAL EXHIBITION.

THE collection of drawings in the Conduit-street Galleries shows this year no falling off certainly as to the number of designs contributed, and, on the whole, these may be said to be of greater average merit, and to possess more variety of interest, than the drawings of last year's exhibition. The disparity between the number of Classic and Gothic designs, though the latter greatly predominate, is not so remarkable as in the architectural room at the Academy; it may be that in the eyes of academicians, who look mostly to drawing, a Gothic design makes a better and more effective drawing, as a rule, than a Classic one. Whether we can congratulate the adherents of Classic design upon having done more to advance their cause they have at heart is, however, "a question to be asked?" and to be answered, we fear, in the negative: certainly we have noticed nothing so good or original as Mr. Wild's small drawing in the Academy (referred to in our last number), and it must be conceded that on the whole not the best drawing and the best and most original designing to be found in the room belong to the adherents of Mediaevalism, ancient or modern; for there is a modern Mediaevalism quite distinct from the original article. The modern antiquity disports itself most conspicuously in town-halls, which, once upon a time, were supposed to be of necessity Renaissance, and are at present equally of necessity Gothic. The size and showy character of the drawings which illustrate these lead one at first sight to suppose that town-halls predominate in the Conduit-street Exhibition. As a matter of fact, however, out of the 204 drawings hanging the principal room (excluding the screens), only twenty are illustrative of town-halls, while thirty-five are devoted to domestic architecture, and fifty-two to ecclesiastical design; the rest being various, including banks, schools, organ fronts, and decoration of various kinds. We will be guided by numerical superiority, and see first what there is to attract us among the churches.

These, to my truth, are not very satisfactory, or rather, perhaps, they are no more than satisfactory; comparatively few exhibiting either general treatment or originality, and some of them not individually from among the crowds of designs for churches which are being, and have been of late, turned out by our leading popular church producers. Mr. White shows us elevation, plan, and details of "Holy Trinity Church, Barnstaple" (9), "built, 1845; remodelled and rebuilt with the old materials, and the tower lowered, 1869." As we have no drawing of the tower in combination with the rest of the church, we cannot judge how far the whole composition may have been affected by the unusual course of lowering a tower already built, nor are we told whether it was done by the architect, or by the ground. The present drawings show a good, but not remarkable, Decorated Gothic design, with plenty of unbroken wall-space between the windows; but as a "remodelling" it is difficult to judge of it. Mr. F. Channell's very pleasing pencil sketch of "St. John's Church, North-end, Waltham, Essex" (12), shows a very clever and picturesque design, especially as to the tower, but with too much roof in proportion to the walls, and the long, narrow slip of roof left between the tower and the east-aisle wall has an unhappy effect in the drawing, though it may not really be so bad as it appears in this view. Mr. Emerson, in his exterior view of the "Choir of Allhallows Cathedral, in course of Erection" (15), the interior of which (No. 793 in the Royal Academy) we alluded to last week, goes against all associations as to tropical architecture, in this heavy, columned Romanesque design, which, on other grounds, has a certain merit and dignity, notably in the heavy drop arches which shadow the clerestory windows, the supporting shafts of which spring, however, rather awkwardly from the aisle roof. We may notice in passing the same architect's "Interior Perspective Compo-

sition Design for National Bank, Bombay" (16), which exhibits much the same merits and defects as the cathedral. Mr. Blomfield's interior view of the Church of St. Barnabas, Oxford, and of St. Mary's, Strood, Kent (25, 26, 27), show the usual clear drawing and colouring and the usual accurate and satisfactory Gothic design which we are accustomed to receive at his hands, but not very much more.

There are a good many other churches in the room, which we must refer more briefly; among the best, perhaps, are "St. Michael and All Angels, Stepney," by Messrs. Jarvis & Son, and "Congregational Church, Stamford-hill" (98), by Mr. Chatefield Clarke; the latter a small but very well-drawn and carefully considered west elevation of the interior of St. George's Church, Tufnell Park, Holloway" (so pretty well known) (90), by Mr. Truett, is, like many of his designs, a suggestion out of the common way. The view given,—a large and effectively coloured drawing,—shows an octagonal area with surrounding aisle, the clerestory supported by iron columns, which leave the whole floor all but completely unencumbered for worshippers. We regret, the appearance of the iron tie-riods from the springing of one arch to another; familiar as we are with the feature in Moorish architecture, we cannot get reconciled to it independently of the break in the arch and the theory, it is irrelevant, whether the idea of the building being unfinished, and that the tie-riods are only waiting for the "written order from the architect" to be cut out. We must say a word in praise of the treatment of the capitals of the iron columns, in which no attempt at cast-iron imitation of carving is made, but a series of thin flat scrolls, turned over at the top in a curl, and such as could only be executed in the material actually employed, give a truthfulness of expression not often seen in ironwork employed in that position. The exterior and interior views of "Christ Church, Clapton" (95, 97), by Mr. James Brookes, are worth notice; they show a solid though rather heavy design in red brick, with stone dressings, in the modern chamfered Gothic school. We must point out the very bad effect of the circular wooden barrel vault (a disagreeable fashion of church roof, which too much prevails at present), crossed by series of parallel ribs, with the inevitable bands at intervals, and which in the perspective view, look rather like the ribs of a toast-rack seen in perspective. "A Specimen of Etching prepared for the Photo-lithographic Process" (154), drawn by Mr. W. H. Lockwood, is an admirable specimen of clear and effective architectural etching not overdone with lines (which is the temptation of etchers), and showing a very pleasing design, by Mr. G. C. Haddon, for a "Congregational Church" at Hereford. "Sketch in Waltham Abbey, showing new east end, erected in 1864, and the old east end and superstructure of 1640" (Mr. W. Burgess (155), is one of the most effective water-colour drawings in the room, small in size, but finished with great depth of tone and chiaroscuro. The west end shows Mr. Burgess's usual merits and defects, defects which are perhaps inseparable from the peculiar style in which he has elected to work. A circular-headed recessed arch in the wall, with square shaft springing from short heavy columns in the jambs, encloses a large circular plate-tracery window, with circular centre light and seven three-quarter circles in rose-fashion round it. The recessed opening of circles, and parts of circular tracery wearing to the west end, is a trifling stage, consisting of a pointed arcade on the same short shafts, which Mr. Burgess is so fond of, and with a band of deep quatrefoils over it, not in panels, but dead sinkings (apparently), in the wall face. There is certainly some exaggeration in the enlargement of the strength in this kind of treatment of Gothic, but it becomes wearisome after a while, and we cannot but wish for something more of refinement of outline and finish of detail along with this boldness and solidity of treatment. As a great contrast to such a design, let us look at the exterior finished elevation of Mr. H. Hall, of the west front of M. Ballo's "Church of St. Trinité, Paris" (181). This is a Renaissance façade, with some modern details, admirable as a whole in point of composition and outline, with its well-contrasted centre copola, and dome copola at the angles, the former in light, the latter in dark, dignified, yet dignified, sufficiently pyramidal in form to carry the eye up naturally to the apex of the composition, yet without interfering with the general horizontal lines of the front. The transition from square to

octagon is happily managed on the whole; but the small thin wiry flying buttresses at this point are a very weak feature, though fortunately not obtrusive or awkward. The ground story, with sufficiently massive piers and round arches of a kind of refined Romanesque type, backed by a deep shadow from the entrance porch or narthex in the rear, forms an effective base to the whole composition. This front has certain defects common in Renaissance designs: certain want of solidity, and homogeneity of expression, a system of design in successive stages, not sufficiently interdependent, and with windows here and there arbitrarily placed in the centre of a compartment of wall, with their sill and pediment, totally irrespective of composition; but on the whole it may be a highly successful and successful design, though made out of not quite satisfactory materials, and is, at all events, more expressive of the tone and feeling of modern life in regard to matters religious than many of the Gothic—very Gothic—designs that are springing up around us; and we commend it to the notice of students who may be in quest of being forth ecclesiastical designs not totally out of harmony with the modern life around them. It may be observed, by the way, that the circular wheel window over the entrance, though in general form just what may be found in early French work (as at Chartres, for instance), has slight modifications of detail, harmonious completely with other Renaissance details. Sculpture is freely, but not too freely, used in the decoration of the façade. Mr. C. F. Hayward shows us a pleasing design, in the "Church of the Holy Innocent, East Shefford" (158), which, by the way, might have been a little better illustrated than in the pencil drawings he has sent.

Nothing could better bear out some recent remarks as to architects' sculpture, quoted and endorsed by us in a late number, than the design showing "proposed Sculpture and incised Decoration of the Narthex of St. Peter's Church, Vauxhall" (132), by Mr. Pearson. The church itself, which we illustrated some time since, is a good specimen of effective and picturesque architectural design. Why should the architect propose to adorn (?) it with sculpture which, as representation of the human figure and action, would certainly be ignominiously driven from the doors of the Royal Academy? Why are the lines of the hood moulds over the windows to cut into and interfere with the bas-reliefs above, thus conveying the idea that the whole sculpture is an afterthought, for which no provision has been made, and that it is to be squeezed in anyhow? Why are the "Resurrection" and the "Entry into Jerusalem" always represented by those architects who introduce sculpture, with figures below the natural height and proportion of a man, and without elbows, or calves, or their own feet, and with the question, "What men?" If Mr. Pearson or his friends can give us a definite and reasonable motive for this treatment of sculpture, when it concerns what are to the majority the greatest and holiest of subjects, in a manner which would never be tolerated, which would simply be laughed at, in an ordinary ecclesiastical design, we are bound to say why the same proficiency in anatomical knowledge and figure composition is not so necessary for the production of a figure of "Christ entering Jerusalem" as for one of "Venus Victrix" or "Cupid expiring,"—we will retract our observations, and humble ourselves in dust and ashes. In the meantime, we are bound to say *admirabile*: let architects study architecture, and leave the designing of sculpture to sculptors; except as exercising a general influence over the style and position of the sculpture, which we hold that they should do, as the architect ought always to do, in order to have, for the most part, the *ensemble* of his building more than the sculptor can have been able to do. Under the head of ecclesiastical design we may class a drawing for an organ-case for Melbourne (120), by Mr. D. Ruddle. We are glad always to see this important piece of furniture taken out of the hands of the organ-builder, and treated artistically treated. This is a Renaissance design, with a very good and effective plan of front line, and finished with little dormers and gables and festoons in a not very original manner, though pleasing on the whole; but the large piers want a heavier base or plinth under them, and the cornice, which is not a cornice, does not make the crown of the whole, instead of projecting the tops of the piers above it again? One of the main objects of the screen should be to hide the uneven line of pipe-tops, which

most always be snaihty, except in the case of very large pipes (in a "32 in." stop for instance), which can receive such a separate decorative treatment. The panning in the dado is very weak compared with the upper portions. There is another so-called "Design for an Organ-case" (17), with the pipes merely ranged nakedly in a pyramidal row on two faces (the worst possible arrangement, by the way, as the organ-builder always wants the large pipes at the sides, not in the centre). It is difficult to imagine why Mr. Tarror should have made this drawing, still more why it should have been hung.

Among designs for public buildings of various kinds, we need merely mention that Mr. Street exhibits several of his views of different portions of the proposed Law Courts, which have been sufficiently discussed and criticised already. Mr. Nevill sends photographs of his "Bradford Town Hall Competition Design" (19), of which we have sufficiently expressed our judgment, as to the exterior, in reviewing the Academy drawings last week; the interior view of the lower hall, "Borough Court" (51), is, we ought in fairness to add, much more successful, as an interior, than the exterior general design. Mr. C. O. Ellison sends a large perspective view of competition drawing for "Legislative Hall, Douglas, Isle of Man" which we are not surprised to find an unsuccessful one. The drawing is, to be sure, very badly coloured, which tells against it as to general appearance; but no drawing would redeem the effect of the heavy stepped gables of the dormers, and the inartistic treatment of the upper portion of the tower, which is, besides, far too heavy for its base. The end elevation and other portions shown in drawings 170, 171, 172, &c., which are omitted, have a better appearance. Another competition design, the "Wesleyan Theological Institution" (179), by the same hand, is a better design, and of a less odd type. The author adopts the expedient of placing in the corner of the drawing a very small perspective view representing (on his own statement) the design actually executed,—a shrewd idea, no doubt; as to the fairness of good taste of which there may be two opinions.

We must postpone other observations till next week, but would, meanwhile, mention that several remarkable drawings of furniture and decoration by Mr. Owen Jones, declined by the Academy, as were several other important drawings now in this gallery, have been received by the committee. Although sent in after the stipulated time, we trust that space will be found for them.

METROPOLITAN BUILDINGS AND MANAGEMENT BILL.

In answer to Mr. Dillwyn, in the House of Commons on Monday last, Sir W. Titton said he was certainly his intention to proceed with this Bill, if he could find an opportunity, but if the objection to the measure was one of clauses, and not of principle, he should offer no opposition, after it had been read a second time, to its reference to a Select Committee.

At a meeting of the City Sewers Commission on Tuesday, Mr. Alderman Lawrence, M.P., called attention to the Bill, which, he said, was a measure that interfered with property, not merely within the City, but outside of it. It was divided into eighteen divisions; it had seventeen schedules, and there were 132 clauses. The Metropolitan Board of Works, by whom it had been brought forward, had just issued copies, accompanied by sixteen pages of observations, and an additional page of notes. It was a Bill which was of importance both to owners and occupiers of property, especially within the City. He might state shortly that in streets 40 ft. wide, the height of buildings was to be limited to 60 ft. from the pavement to the eaves of the roof; and in streets of more than 40 ft. in width, 65 ft. Warehouses or other premises were limited to 216,000 cubic feet, and if larger sites they must be divided by party walls without any opening whatever; 216,000 cubic feet might seem to indicate a large amount of space, but it was only the cube of 60 ft., so that the premises would only be 60 ft. long, 60 ft. wide, and 60 ft. high. Buildings like the National Accident Company's offices in Cornhill, or the Union Bank, opposite the Mansion House, could not be erected in the City after the passing of this Bill, unless the Metropolitan Board of Works were specially to give permission. Again, in the event of half of premises, such as those occupied by Messrs. Loaf, Messrs. Paw-

son, Messrs. J. & R. Morley, and others, being destroyed by fire, the other half would have to be pulled down and reconstructed in accordance with the provisions of the Bill; the object being to reduce premises both in size and height, as a protection against large fires. The effect upon the value of property in the City would be very great. The Bill affected not only the wholesale warehouses in the City, but also the large retail houses at the other end of the town; for no premises like Swan & Edgar's, Peter Robinson's, or Marshall & Snelgrove's could be constructed under this Bill; and if, unfortunately, more than half of any of these premises should happen to be destroyed by fire, the remainder would have to be pulled down and subdivided into compartments of 216,000 ft. without any means of communication between one portion of the building and another, except outside fireproof galleries. The Metropolitan Board of Works, through their representative, Sir William Titton, were anxious that the Bill should go before a select committee; but he (Alderman Lawrence) was quite sure that at the present moment the whole of the interests that were jeopardised by the Bill were entirely ignorant of its contents, and therefore he thought the Court should examine it closely, because, however anxious they might be to protect premises from fire, they should not be led in a panic to drive the trade and commerce out of the city of London, which would be the consequence of this Bill being carried out in its entirety.

On Monday evening Mr. Alderman Lawrence presented a petition from timber merchants and other engaged in the wood trade in the metropolis against the Bill; also one from the Fishmongers' Company, with similar prayer.

It ought to be known that before completing the Bill the Metropolitan Board of Works invited the Institute of Architects and the District Surveyors' Association to send each three members to confer and advise with their Parliamentary Committee. This was done; the joint committee sat a number of times, and the Bill was modified in various particulars in consequence.

We have already pointed out some of the peculiarities of the Bill, and will return to the subject if it go to Committee. The Board have agreed, we understand, to modify the clause objected to by the timber merchants.

The Board intend to propose in Committee the insertion of the following additional rules:—

"Every wall of a dwelling-house shall have a damping course; that is to say, a course of slate laid over some other material impervious to water, at a height not exceeding 1 ft. above the outer ground surface or the top of the chimney, whichever is higher."

Where any room in a dwelling-house is below the level of the ground, and has a fireplace and window, a dry area outside bounded from the level of the footings to the top of the ground.

The ground surface or site of every dwelling-house, and the area outside, shall be covered with good concrete at least 6 in. in thickness.

There are localities where the first and third of these requirements would be unnecessary, so that exceptions would be requisite.

ARCHITECTURAL PRACTICE.

MANCHESTER SOCIETY OF ARCHITECTS.

The president of the Society, Mr. A.W. Mills, in the course of his address to the last general meeting, said the next subject to which, for a few moments, I desire to call your attention is one that frequently occasions us a great deal of trouble, and that we run into a corner with the responsibility. It is, the materials and workmanship which we are supposed to control in the conduct of our business. A rather long experience and observation satisfies me that in my knowledge of such things I am in my infancy,—the longer I live the more I have to learn. The ability displayed to supply an inferior material, and to cover it with loose workmanship, seem me to require kept equal pace the one with the other. I take this opportunity of impressing upon you the necessity there is for showing no hesitation in dealing with the attempts which are constantly being made to supply us with materials and workmanship for our buildings which are not in accordance with the conditions of our specifications. The trouble and difficulty and ultimate responsibility which these proceedings sometimes lead to are incalculable.

The next point to which I shall refer is one which I venture to touch upon with a little delicacy; but, nevertheless, I think I may draw on the privileges of my office to do so. I

allude to the planning and contrivance of buildings intended for public purposes, in which large numbers of people may be exposed to assemble. In these buildings we very often find the most inadequate means provided for getting the multitudes speedily out. We have lately heard of one or more serious calamities, which might have been prevented, so far as the injury to life and limb is concerned, by proper attention on the part of the architect to this important requirement in preparing plans. I confess I have myself looked with considerable apprehension on more than one important building in case a panic should seize the occupants. The responsibility of an architect for the neglect to attend to the means of egress from any public building is very considerable. Although it may not be direct, the responsibility is nevertheless there; and it has occurred to me to ask if it would not be possible, in planning public buildings, to provide some extraordinary means whereby the public could on necessity escape, but which should not be used except on such an occasion, and which really need not form any part of, or interfere with, the external appearance or internal convenience, except on the special occasion upon which it might be necessary to use it.

Before concluding, I shall draw your attention to one other point, which we find constantly interfering with us in our practice, and subjecting us frequently to a large amount of difficulty and annoyance, and our employers to a large amount of expense. I allude to the asserted right of light over certain properties which we are occasionally called upon to rebuild or improve. There is scarcely any one of us who has not experienced some inconvenience in either protecting or destroying some right or supposed right having reference to light. In most cases the right to light over an adjoining property in a city like Manchester, which may be said to have been rebuilt in the last fifty years, has been acquired,—time has given the privilege,—no pecuniary consideration has purchased it; and it does appear to me very trying (giving my individual opinion) that the owner of a masonry building on a very valuable piece of land should be prevented building any higher because the owner of the neighbouring plot happens to have put windows out that overlook the lower building, which windows happen to have been formed over twenty years. After devoting some little time to the subject, I am inclined to think that a fairer law would be that the party said to be about to injure a neighbour's lights should not be restrained, unless it can be shown that the injury, if any, is incapable of being assessed at a money consideration.

THE NEW WATERWORKS, CANTERBURY.

These works are now nearly completed. They are situated in Wincheap, alongside the high road leading from Canterbury to Ashford, on an oblong piece of ground, two acres in area, enclosed on three sides by brick walls 9 ft. high, and on the fourth, or south side, by the public road, bounded by a substantial dwarf wall and piers with iron railing, having appropriate entrance gates and doors.

The works in the enclosed ground comprise accommodation roads, an engine, boiler, well, and lime house, tall chimney-shaft, coal-store, covered softening and lime-water reservoirs, workshop, and offices; two wells or cisterns, powerful steam-pumping engine, and two steam boilers, each with a large open artificial pond, constructed for the purpose of cooling the heated water discharged by the air-pump from the condenser of the steam-engine. The heated water is so discharged from the engine as to fall into the pond in numerous small jets, that form a sort of fountain.

From the entrance-gate, as well as from the road before the works, the front elevation of the engine, and the boiler, and the well-house, the coal-store, and the softening reservoirs can be seen. This elevation shows a line of buildings about 170 ft. in length. From behind the boiler-house the main chimney-shaft rises to a height of 90 ft. The whole of the buildings, chimney-shaft, and mouldings are built of solid bricks, having copings and string courses of solid Portland cement mortar.

The pumping-engine works two sets of pumps. One of the pumps raises spring-water at the rate of 750 gallons per minute from one of two bore-holes sunk by the company into the chalk, and discharges the water into the adjacent

covered reservoir, where the water is softened by Dr. Clark's well-known liming process. The other pump pumps the water from the softening reservoir, after it is softened, at the rate of 500 gallons per minute, through a line of 12-inch pipes, two miles and a half in length, laid by the company, from the works at Wincheap, along Castle-street, St. Margaret's, St. Peter's-street, and St. Dunstan's, into the covered service-reservoir on the top of St. Thomas's Hill, situated at an elevation of 200 ft. above Westgate, or of 150 ft. above the pavement of the engine-house floor at Wincheap. The engine is capable of working up to 100 indicated horse power, is of the most improved construction, and freely works both sets of pumps at once.

The bore-hole or well from which the water is pumped is 20 in. internal diameter, and is lined with cast-iron cylinders for a depth of 2 ft. in depth beyond this depth the bore-hole is 24 in. internal diameter, sunk to a total depth of about 600 ft. The bore-hole stands quite full of water to a normal level of not less than 8 ft. 6 in. above the river Stour at Wincheap, and yields a much larger quantity of water than is required to supply the 750 gallons of spring-water per minute pumped up direct from the bore-hole.

The softening reservoirs are capable of softening about 350,000 gallons per day of twelve hours, or a much larger quantity, say 550,000 gallons in the twenty-four hours.

The walls surrounding the softening and lime-water reservoirs are all covered with a roof built of wrought iron joists, and Portland cement concrete. The top surface of the concrete is rendered with Beysse's asphalt, 5-8ths of an inch thick, and the asphalt is covered over with a layer, about 8 in. in depth, of clean gravel stones. Altogether the roof is quite 2 ft. 3 in. in thickness, so that it is impervious alike to the heat of the summer sun, or to the cold of the winter frost. This tends to preserve the normal temperature of the spring-water which, as it is pumped up, is 51° Fahrenheit at all seasons of the year. The weight of the roof is made to contribute to the strength of the two division walls between the reservoirs. These walls are only three bricks and a half, or 2 ft. in thick, including the thickness of the rendering, and have to sustain a weight of 15 ft. 9 in. of water, equal to a pressure of more than 31 tons per foot run, or of 250 tons on their whole length. The walls alone would have been quite inadequate to sustain this enormous pressure, had not the weight of the thick roof been thrown upon them in such a manner as to contribute to their stability and strength.

The engineer is Mr. Homersham, and Messrs. Gaskin & Godden are the builders.

THE DERBY EXHIBITION.

THE Art and Industrial Exhibition at Derby has been inaugurated by the Duke of Devonshire, who is Lord Lieutenant of the county. The weather was fine, and the attendance of holiday observers was large. The magistrates, clergy, mayors of adjoining towns, and others, went in procession from the town-hall to the drill-hall, where the Exhibition is held. A "grand processional march," composed by a citizen of Derby, was played on the occasion, and an inaugural ode written for it by a clergyman, was sung. The board of directors thus describes the chief part of the Exhibition:—"We, the directors, have taken the tranche in Beckett-street immediately into the large court, which has been entirely covered with glass. On the right are arranged the bazaar stalls, most tastefully draped and decorated, having quite a fairy-like appearance. Opposite the stalls on the left of the court are arranged the ferneries, grottoes, waterfall, fountain, &c. The effect produced here is really surprising. Passing on we enter by a prettily-draped archway into the great hall, the first sight of which impresses us at once with some idea of the immensely rich collection of works of art and beauty contained there. We cannot attempt to describe any of the varied contents of the Exhibition, but must content ourselves for the present with giving a mere outline of its arrangement. The great hall is divided by three high wooden screens into arranged the thousands of marvellous paintings which have been so liberally lent for exhibition. On the right and left of the centre avenue, near the door, are arranged long glass cases, containing, no doubt, the finest collection of china ever got together in the world. In the centre of

the building is a tall glass case containing some splendid silver-plate, of exquisite workmanship and of immense value. Beyond this, the centre avenue is subdivided by two long screens, principally occupied by the water-colour drawings, in which the Exhibition is particularly rich."

THE LATE MR. HENRY GARLING, ARCHITECT.

ON the 9th of last month died, in his seventy-second year, Mr. Henry Garling, of Bedford-row, and long a member of the Royal Institute of British Architects. Mr. Garling was articulated to Mr. Page, of King's-road, Bedford-row, who, as usual in that day, combined the business of architect, surveyor, and builder; and, for three years after his articles, Mr. Garling acted for him in superintending (in fact, designing and doing everything, Mr. Page never answering any letters), in the remodelling of Grimsthorpe Castle, in Lincolnshire, for Lord Gwydir (Willeoughby d'Eresby). He became a student of the Royal Academy, and gained the silver medal in 1818—started for himself about the same time, or perhaps a year or so earlier, and appears to have obtained a large practice as a measuring surveyor, and especially a large connexion with several of the best legal firms of the day as a surveyor in valuing for debts, mortgages, dilapidations, and all the matters connected with estates; and he became a surveyor to Ragby School estates about 1821.

Architecturally, he was engaged extensively for Lord St. John of Bletsoe, Baron Vaughan, Earl Spencer, and the Carron Company, of Thame-street. The market-house at Guildford, the new Union workhouse, were also designed and superintended by him, and he became a business in 1847, having accumulated considerable property. He had a fine library, and had become governor of Christ's Hospital, St. Thomas's, Bethlehem, and other institutions.

We have heard him say, that when in Mr. Page's office he was associated as clerk with the father of Edmund Kean, the actor; and how Kean, asking him home to a very frugal supper, in some not very aristocratic neighborhood, and probably "high up" there, would borrow half-a-crown to procure the necessary beer.

Mr. Garling was a man of remarkable powers of application in business, and especially notable for his intimate acquaintance with practical detail of every kind, an advantage he derived very much from the school in which he was trained. We received and printed notes from him up to within a few days of his death.

His son, Mr. H. B. Garling, has distinguished himself on more than one occasion.

MEMORIAL WINDOW, BLACKLEY.

A LARGE and handsome stained glass east window, to the memory of the late Rev. W. R. Keeling, B.A., 31 years rector, has just been erected in Blackley parish church, near Manchester, and for a long time will no doubt prove a source of attraction to the congregation and parishioners.

The window is in the Early Decorated style, and consists of five lights, each representing some important event in the life of Our Saviour; the first being the Nativity, the second the Baptism, the centre one the Crucifixion, the fourth is the Resurrection, and the last, the Ascension. Below these groups are the traditional emblems in the following order:—the Alpha, the Lily, the Crest of the late Rector, the Rose of Sharon, and the Omega; while over each group is a brilliant canopy surmounted by another suitable emblem;—first, the Lamb, as symbol of innocence of infancy; then the Dove, as typical of the Holy Spirit; over the Crucifixion is the figure of the Pelican (emblematic of Love's Sacrifice); the Palm-leaves of Victory are set above the Resurrection; while the final scene, the Ascension, is surmounted by the Queen's Crown and Stars. A proportionate quantity of subtle ornamentation is cast over these, while above all there is an elaborately decorated wheel-light, 6 ft. diameter. The total height of the window is 21 ft., and its width 11 ft.

Our correspondent says this memorial reflects very great credit upon the firm that has designed and produced it, Messrs. J. Fox & Co., of Lime-street, Liverpool. The design was chosen in competition with several others. The cost will be over 400*l*.

PREVENTIBLE FATAL ACCIDENTS.

THOSE persons whose business in this life consists in wading off by all practicable means the approach of death, are never so much annoyed and grieved out of their reckoning as they are by a consideration of that persistent and alarming increment of our mortality-tables, which is classified under the repressive head of Fatal Accidents. Whether they are engaged as physicians in the cure or alleviation of particular cases of human suffering, or as sanitary economists in battling with external circumstances, including general error and neglect (the latter state physicians), or finally as architects or engineers in the design and construction of improved buildings and machinery, the observation and study of these fatal accidents produce on the mind only the same feelings of deplorable regret.

Why should there be so many fatal accidents in the present day? We wish to inquire. Why should there be such a plentiful harvest of death in this precise field of our common mortality? There can be no doubt as to the facts, as our own countrymen can faithfully testify, and there is a very little difference in their general description.

We must admit at once that it is quite possible to answer this very grave question in a certain fashion, at least, by the old and worn-out scholastic syllogism—they exist; ergo they were intended to exist; accidents have always happened, therefore they will continue to happen. Hence it may occur that many good people who are otherwise sensible enough are sadly led astray in their conclusions. Because of the regular and frequent occurrence of such accidental deaths, they have come to regard them as inevitable, and the singular facts of the great quadratic equation of our mortality-tables; or, in short, as the indispensable sacrifice which is annually demanded of us by the genius (or the fiend, as the case may be) who presides over our progress in science and the arts. But surely such a purely fatalistic notion cannot be correct. It will not bear the most slender scrutiny as a theory; nor, in our opinion, can it account practically even for the most obvious and perceptible causes of the fatal accidents which are accumulating every day around us.

There is, unhappily, also, a strong tendency among certain classes of scientific and statistical writers,—particularly of that materialist school which is represented by Messieurs Quetelet and Augustus Comte,—to regard such phenomena with the perverted light of a grim and fatalistic philosophy, almost, indeed, as if their inevitable and constant recurrence were a dispensation of Providence! Here is an example of their reasoning, such as it is. There are so many deaths in a given population per centum per annum. Of these deaths a constant quantity consists of fatal accidents. There are likewise so many suicides at the Fort St. Martin; so many dead bodies deposited at the morgue; so many people accidentally shot; so many letters without addresses dropped into the post-office. Such things happen regularly every year. Hence they proceed to demonstrate to their own entire satisfaction that a monster which they have created after the manner of Frankenstein, yclepeth the "average man," is subject, by the very laws of his constitution, and the conditions of his existence, to an average number of fatal accidents!

It is almost unnecessary to assert that this philosophy is likewise essentially false. The sanitary reformers, at all events, have been accustomed to make and invade upon the average statistics of disease and death, particularly when they began to combat a given death-rate. Sanitary works and death-rates, in fact, have a strong mutual repulsion to each other, or, at least, they possess a very strong natural antagonism, and a certain degree of this important part in neutralising each other in the great problem of the duration of human life. If, then, that increment, which we may term the undrained element of the death-rate, does not represent a constant quantity,—but, on the contrary, can be shown to be reducible by wise precautions and plain scientific appliances to a very unascertainable degree,—how much more should this be the case with the increment which we

What is an accident? An accident, if we must need go to the root of the logical expression, is a mere property of an object which may be modified, or may be altogether abstracted or just as rationally as in the habit of terming fatal accidents?

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IMPERIAL INAUGURATION OF THE VIENNA WATERWORKS.

THE execution of this great work, after having been for several years under discussion, has been ultimately decided on.

The supply of water to Vienna and its suburbs, comprising a population of about 800,000 inhabitants, is a matter of the greatest importance. Hitherto the whole supply was obtained from the Danube. By the present project it will be drawn from the "simmering" at the foot of the picturesque Alps, from two springs, viz., "Kaiserbrunn" and "Stitzenstein," whence the purest spring water will be conducted to the principal reservoir, the "Rosenhügel," a spot beautifully situated on a hill near Vienna. Here, on the 21st of April, the Emperor of Austria solemnly inaugurated these works, attended by the Imperial family, the Austrian Court, the English and other Ambassadors, the nobility, and municipal council of the city, and all the nobilities of the empire.

The total length of the line of these works, from Kaiserbrunn, and from Stitzenstein to the Rosenhügel, is 312,375 ft., passing by Ternitz, Baden, Weikersdorf, Matzendorf, and Mödling. The two springs at Kaiserbrunn and Stitzenstein are to join at Ternitz. There will be 24,900 ft. of tunnels, the longest of which, in the "Hollenhalm," measures 8,463 ft. Through the whole length of the line the water will be conducted in walled and covered canals, worked with hydraulic lime and Portland cement, where the water level will be 6 ft. beneath the surface of the ground, to protect the water alike from frost and heat. The most important viaduct will be constructed at Baden, Mödling, Lissing, Maria, and Spiezling. From the reservoir at Rosenhügel the water will be conducted to the two other reservoirs at Schmelg and Wienerberg (called "Spänerin am Kreng") in cast-iron pipes of 33 in. and 36 in. diameter. From these three reservoirs the water will be led to the interior of the town through pipes of the smallest diameter.

The Danube canal and river Wien are to be traversed by pipes, sunk beneath the bed of the river, in order to continue the system from the opposite banks, and the top edges of all the pipes will be also laid 7 ft. beneath the surface of the ground. The length of this line of pipes is about twenty-three English miles, and that of the whole system about eighty English miles.

The total length of the five viaducts is 5,382 ft., the longest of which, at Baden, is 2,739 ft.

The contractor for these works is Mr. A. Gabrielli, of Westminster Chambers, London.

KIRBY-HILL CHURCH, BOROUGHBRIDGE, YORKSHIRE.

KIRBY-HILL Church has been re-opened for divine service. At a short time ago, in consequence of the dilapidated condition of the church, the opinion of Mr. Gilbert Scott was obtained. His plans were adopted, and the contract for carrying out the restoration was entered into with Messrs. Shafto & Barry, of York. They have completed the work under the direction of Mr. Alfred Roome, clerk of the works. Owing to limited funds, the original contract did not embrace all the restoration necessary to complete the church in its integrity, but this has since been done. The church is of great antiquity, and many remains of carved crosses and other stones, evidently of Saxon origin, have been found during the progress of the works. The south porch doorway is Norman, but the remains of two former doorways still exist beside the present one, some arch-stones remaining of the nave, and the joint and carved impost of another. The Norman arcade dividing the nave from the north aisle has been restored. Some mural painting discovered upon the arches has been preserved. This arcade, also, from the appearance of the stones, is an insertion in a Saxon wall. The north aisle has been entirely rebuilt. In pulling down the walls of the former aisle, a fragment of tracery was found belonging to an ancient Decorated window. The design was traced, and has been carried out in the new windows. The whole of the seats in the church are now of oak, made from the original design, with curved poppy-head finials, and the ancient seats found in the church have been re-used. The main features of this church now present a similar appearance to what they did centuries ago, and there is sitting accommodation for upwards of 250.

SCHOOLS OF ART.

The Derby Central School.—On the eve of the inauguration of the Derby Art Treasures Exhibition, there was commenced at the Mechanics' Institution, Wardwick, a Central School of Art. The school is in connexion with the Science and Art Department, South Kensington, under Government inspection, and will receive a share of the Government grant according to the proficiency of the pupils. The school opens under distinguished patronage, and is to be worked under an earnest committee, by a very competent teacher. Some years ago an attempt was made under far less favourable auspices to establish such a school.

The Southampton School.—The foundation-stone of the new School of Art now in course of erection at the rear of the Hartley Institution has been laid. The stone bears the following inscription:—"Southampton School of Art." This stone was laid by Mr. Councillor Chipperfield, chairman of the Hartley Council, on April 6th, 1870.—Frederick Perkins, esq., mayor; James Lemon, esq., M.E.R.A., architect; F. T. Bond, esq., M.D., F.G.S., principal; Messrs. Joseph Bell & Sons, builders. The building, according to the local independence, is rapidly approaching completion, and is expected to be fit for occupation at the conclusion of the summer vacation.

CHURCH-BUILDING NEWS.

Shiplake.—The ancient church of Shiplake has been re-opened after restoration. The work has been carried out by Messrs. Wheeler, of Reading, from plans by Mr. G. E. Street, of London. The chancel is entirely new. The stained glass windows and polished marble pulpit are the principal features seen on entering the church. The whole of the north wall is new, as also the chancel; eleven windows have been filled with stained glass, by Messrs. Horwood, of Frome; the small baptismal window being presented by Sir R. Phillimore. The chandeliers were made by Messrs. Hardman, of Birmingham; the pulpit and reredos are of alabaster, carved by Mr. Earp, of London; the tiles were made by Godwin, of Lymington, those in the chancel expressly manufactured for the Shiplake Church. The bells have been re-hung by Messrs. Warner, and a new one given by the vicar added to the peal. Messrs. Wheeler, of Reading, were the builders employed.

Breinton.—The Church of St. Michael, Breinton, on the Wye, has been re-opened. The present restoration consists of the re-building of the chancel on its old foundations, the old windows having been worked in again, and the partial re-building of the nave, the west gable, and western end of the south wall of which remain as they were; the remainder is new. The nave is divided from the chancel by a large and well-proportioned arch. On the north side of the nave a new aisle has been added, which is divided from the nave by an arcade of four pointed arches, carried on columns of blue fluted stone, with moulded caps and bases. The nave is lighted on the south side by two windows, one having three lights and the other two. There is also an old lancet window over the circular-headed doorway at the west end. In the north wall of the aisle there are three windows, having two lights each, and of similar character to those on the south side of the nave. There is a lancet window in the east end of the north aisle, and a circular window at the east end, over the archway leading to the organ-chamber and vestry. The floors throughout, the nave, north aisle, porch, vestry, and chancel have been laid entirely with tiles from Mr. Godwin's manufactory at Withington. The seats in the nave are of deal, varnished. All the roofs are new, and covered with slate; the nave, north aisle, vestry, being open-timbered. The walls of the chancel internally are painted. There is a bell-turret, about 8 ft. square, at the west end of the nave, surmounted by a spirelet, treated entirely in slate and lead work. It is about 68 ft. high from the ground-line to the top of the vane. The cost of the work has been about 1,600l. The contractors were Messrs. Collins & Collis, of Tewkesbury, by whom the work has been carried out from the designs and under the superintendence of Mr. Frederick R. Kempton, Hereford. The stained glass three-light window in the south side of the nave is the gift of Mrs. Eckervall.

Bilton.—The ancient parish church of Bilton, having gone much to decay, has undergone a restoration under Mr. G. G. Scott, and the structure

has been re-opened for divine worship. The expense incurred by the restoration is in round numbers the sum of 1,800l. The restoration has been carried out by Mr. Brumby, of York, the contractor. Mr. Brumby sublet the carpenter's and joiner's work to Mr. Dennison, of York.

Burton-in-Lonsdale.—The new church of All Saints, which has been built at the sole expense of Mr. Thomas Thornton, of Brixton-hill, London, "for the benefit of his native place," has been consecrated. The building is in the Early Gothic style. The site chosen is in close proximity to the old church, and upon ground formerly occupied by cottages, in one of which the benevolent donor was born. The dimensions are:—Nave, 66 ft. by 23 ft., with aisle, 66 ft. by 17 ft.; chancel, 33 ft. by 21 ft. The tower contains six bells. A residence for the vicar has been erected near the church. The parish church of Thornton-in-Lonsdale, which is about four miles from Burton, has also been consecrated after having been rebuilt. It is dedicated to St. Oswald, and the architecture is of a similar style to Burton Church.

Birstal.—The parish church of Birstal, which has been entirely rebuilt and enlarged, has been consecrated by the Bishop of Ripon. The total cost of the re-erection has been nearly 18,000l. The church is in the Early Perpendicular style of architecture. The extreme length within the walls is 115 ft. 6 in., and the breadth 50 ft., and height to ridge, 41 ft. The outer walls are all faced with dressed ashlar, which, together with the moulded and carved work, is executed in Huddersfield stone. The porches, north and south, are lofty, and have grained ceilings, with grained ribs. A battlemented parapet runs round the eaves and gables throughout, and is broken up by carved and crocketed pinnacles over the buttresses, and at the corners. The apex is further enriched with crosses. The clearstory is lighted on either side with eight two-light windows, with traceried heads. The east window has seven lights, and the head is filled in with moulded decorated tracery. The end windows to the outer aisles are each three-light, traceried. The whole of the other windows are square, with cusped heads, and retain as near as possible their original position. The roofs throughout are of deal, with moulded trusses and traceried spandrels, and the chancel-roof has hammer-beams, on which angels are carved. The seats are of oak, with moulded and carved ends, and in the chancel are placed stalls, which were executed by a Cambridge firm. Messrs. Hardman & Co., of Birmingham, executed the stained-glass and leaded windows. The ironwork of the nave is by Mr. Firth, of Birstal. Mr. Ruddock, of London, did the stone-carving in the chancel, and that in the remainder of the building was executed by Mr. W. Stevens, of Dewsbury. The whole of the building has been carried out by Mr. Thos. Whiteley, of Leeds, from the designs of Mr. W. H. Crossland, of Leeds and London. The church will seat 1,050 persons.

Minster.—The church here has been re-opened by the Bishop of Bath and Wells, after undergoing a restoration. The church was in a very dilapidated state. Mr. Allen, of Crewkerne, architect, prepared the plans for the restoration. The rough casts that were placed outside the tower a few years ago have been removed, and the stonework pointed, and the iron work as did originally. On the north side the walls have been renewed with flint and sandstone, with Hamhill dressings, and the porch has been raised and surmounted with a parapet, with carved cornices and angels' heads, with a cross in the centre. The old windows on that side have been taken out, and a couple of new ones substituted. A new roof has been put to the nave, and new clerestory windows. The organ gallery has been removed, the western side thrown open, and the southern aisle widened. The pews have been removed, and open benches substituted. The roofs of the nave and aisles are of deal, stained and varnished. A south porch has been built, and the roof of the chancel is of oak. A new chancel arch has been erected, and a new arch has been built between the organ gallery and the north aisle. In the chancel there is a reredos, with diapered panels, and ornamented carving.

Uloom.—The parish church has been re-opened after having been restored. The works commenced in 1864, and have been from time to time since carried out by the architects, Messrs. Slater & Carpenter, as far as the funds would allow. The works consist of new roof on chancel, with pannelled and moulded ceiling, as also all

the roofs throughout the church, the whitewash removed from the stonework, and replastered, the whole of the walls restored, the windows reglazed, and some new windows added, the old wainscot pews removed and replaced with open back wainscot seats, new reading-desk, altar table and rail, chancel paved with Milton's tiles, and the old pulpit renovated and replaced. The contractor was Mr. William Bottle, of Harrietsham. Two carved seats in the chancel have been given by Mr. Pepper, of Brighton. The old oak roof in Wandsworth Chapel has been cleaned and repaired, and the chapel has also been newly paved and plastered.

Great Yarmouth.—St. James's Church has been partly opened. The portion completed will form the chancel. The church has been designed by Mr. Seddon, upon a scale almost rivaling that of St. Nicholas. The extreme width between the aisle walls will be nearly the same, and the height of the chancel is not less lofty,—70 ft. The portion already erected presents a somewhat onions appearance, and gives no idea of the whole plan. It is constructed of brick and flint work, and is only a fragment of the design. When completed, the new church will accommodate, at least, 1,000 persons; and its area will contain only four columns, so that light and sound will not be interfered with. The plan is a Greek cross, with aisles parallel to the nave and chancel, bridging the general form nearly to a square. The style is Early Decorated. The walls are to be no internal plastering, as the walls are finished in brickwork, diapered in colour. A lofty tower and spire are contemplated at the north-east angle. The cost of the chancel, as built, is about 1,000l., and the whole church, when fully completed, will cost from 8,000l. to 10,000l. At present, however, the choir and sacristy room has been joined to its neighbour, and forms a north aisle. The new space will seat about 230 persons, so that with the iron aisle, 500 may join in the services of the church. All the sittings are free.

FROM SCOTLAND.

Edinburgh.—The executive committee of the Scottish national memorial of the High Royales the Prince Consort's findings, that the picture entrusted to Mr. John Steel, R.S.A., and other distinguished Scottish artists, has made very satisfactory progress, and is already far advanced, have been considering the description of pedestal that ought to be erected, and have come to the conclusion, leaving to the sculptor, that it ought to be of polished red granite, and not of freestone, as originally proposed. The granite pedestal, executed as proposed, would, it is said, be the finest granite work in the country, and it can be erected for about 2,000l. more than the committee have at their disposal for that purpose. The latter, therefore, resolved to appeal to the public for the additional funds.—The eighth annual general meeting of the Edinburgh Workmen's House Improvement Company (limited) has been held, Admiral Sir Wm. Ramsay in the chair. The report stated that the progress was on the whole satisfactory. The net revenue arising from the rental of the houses enabled them to maintain the dividend of 5 per cent., and to add a further sum of 68l. 12s. 9½d. to the reserve fund. Although the houses built by the company at Dumbiedykes are at present all occupied, the report stated that the intention to which the building has recently been carried on in the neighbourhood of the company's buildings and elsewhere has had an appreciable effect on the letting of houses. Several of them stood vacant during the first and second quarters after Whit-Sunday, and one was vacant for three quarters. There continued a great demand for the lower rented houses, and it was only the houses of the highest rents (12l. a year) that there was any difficulty in letting. The report was unanimously adopted.—The late Miss Walker, of Coates, Edinburgh, has bequeathed her estates to the Scottish Episcopal Church. The value of the bequest is 200,000l., of which, 40,000l. are to be devoted to the erection of a cathedral church in Edinburgh.

Leith.—Since 500l. were given by Mr. David Hinton, of Glasgow, to improve and alter the parish church, considerable progress has been made towards that object. The estimated cost, it is understood, is fully 2,000l. Of this sum about 1,000l. have been promised, and Mr. J. Hardy, chairman of the town-council's committee, has been in communication with

Mr. Ayrton, Chief Commissioner of Public Works, and Mr. Howard, of the Woods and Forests department, regarding Government assistance. Mr. Howard is prepared to recommend a grant of 100l., on the condition that the other subscriptions amount to 1,500l.

Giron.—The foundation stone of a United Presbyterian Church has been laid here. The edifice will be of the Gothic order of architecture. It is intended to contain 400 sittings, and will cost 1,600l. of which 1,000l. are already subscribed.

—Some time ago, the Lunacy Board of Berwick, Roxburgh, and Selkirk areas resolved to erect an asylum for the accommodation of the insane within those counties. A site was fixed upon in the vicinity of Melrose, immediately to the north of the Eldees Hills, where a field twenty-five acres in extent was purchased from the Duke of Buccleuch at a cost of 1,500l. The general plan of the asylum buildings forms three sides of an elongated quadrilateral figure, with a centre block between the wings. The general height is two stories. The south-west front is 377 ft. in length, and the south-east and north-west fronts 148 ft. 9 in., and the centre block between the wings surrounding a small open court is 100 ft. by 120 ft. The long line of the south-west frontage is relieved by the centre building, which consists of the recreation-hall on the ground, and the chapel on the second floor, being thrown forward considerably, and by the infirmary, which is placed at the right and left angles, projecting 43 ft. forward from the general front line. It is further relieved by the style of architecture adopted in the centre division; large windows in keeping with the nature of the apartments the recreation-hall and infirmary show a low projection, and this again is surmounted by two towers, 35 ft. apart, rising to a height of 70 ft., or 34 ft. above the general line of the front elevation. On each side of the recreation-hall in the centre, the plan repeats itself,—the south side being intended for female patients, and the north for males. Considerable progress has been made with the mason-work, upwards of 200 rods of wall being finished, but the building is not expected to be ready for occupation before the spring of 1872. It is intended to accommodate about 150 patients. The total cost will be about 20,000l. The architects are Messrs. Brown & Wardrop, Edinburgh.

The Tay Bridge.—The passing of the Tay Bridge Bill being now certain, the directors of the North British Company intend, it is said, immediately to proceed with the necessary preliminaries, so that operations may be commenced without delay. Certain important alterations are contemplated on the bridge, with the view of reducing the expense and improving the gradients. The works are expected to be begun by August.

Books Received.

A Text-book of Art Studies for Use in Schools and Families. By HENRY WARREN, K.L. London: William Mackenzie, 1870.

MR. HENRY WARREN has long been appreciatively known as the president of the Water-Colour Institute, and an excellent teacher of his art. Like all who think on the subject, he grieves over the ignorance in art matters that prevails, and the little care which is given in general education, and he has issued this little book for schools to supply a want. It takes the shape mainly of a dictionary of painters, sculptors, gem engravers, and illuminators, chronologically placed, with observations interspersed on the art of the different periods. It is a little guide, and is well adapted for use as a reference in a literary hand. For example, speaking of water-colour drawings, by Ostade, in the British Museum, he says,—

"A great number of such drawings by Dutch and French painters are in Holland and elsewhere; and they bring on the art of the different periods. It is a little guide, and is well adapted for use as a reference in a literary hand. For example, speaking of water-colour drawings, by Ostade, in the British Museum, he says,—

To whom this refers is not clear. It is certainly not to Turner. Nevertheless, the little volume is well calculated to be of service; wherever

dipped into something or other useful may be picked out; and we shall hope to find it circulating.

The Science of Building: an Elementary Treatise on the Principles of Construction, specially adapted to the Requirements of Architectural Students. By E. WINDHAM TARN, M.A., Architect. London: Lockwood & Co. 1870.

OLD readers of the *Builder* will not require an introduction to the author of this manual, Mr. E. W. Tarn, or to be told that he has given much more attention to geometry and mathematics than the majority of architects. In the present work he has succeeded, and successfully, to lay before the student of architecture and building a general outline of the scientific subjects connected with his profession, an acquaintance with which could previously be obtained only by going to a number of works by various authorities. The headings of the seven chapters, into which the volume is divided, will show the scope of the work:—1. Mechanical Forces; 2. Retaining Walls; 3. Arches, Cupolas; 4. Building Stones; 5. Timber; 6. Iron; 7. Water contained in Vessels and Pipes; and a Table of Weight per Cubic Foot of Building Materials is given at the appendix. The title, "The Science of Building," is a little too large perhaps, but so far as it goes we have here a very valuable book, which we strongly recommend to all students. The author has sought, by avoiding the use of the higher mathematics, to bring the various subjects within the capacity of those whose mathematical attainments do not extend beyond elementary geometry and algebra. Mathematical knowledge, however, to this extent is necessary for those who would avail themselves of the work.

VARIORUM.

"The Military Chest," and "The Beaver Trappers" (W. Tegg), are two capital little story-books, translated from the German of Horan, by John Henderson. Each little volume contains several stories, the chief in each case giving the title. They are tales of adventure, spiritedly told, and will please both boys and girls.—"The Auctioneers' Land and Estate Agents' Directory," by H. Illmsley (280, Fleet-street), contains a list of the principal land and estate agents throughout the kingdom. Some particulars as to Charges, and a list of useful books for auctioneers, land agents, &c., are worth the attention of those to whom they are addressed. Auctioneers and agents are much better paid than architects, and the latter may find in *Britannica*, edited by Mr. Arthur A. Brockett, and illustrated by Mr. Matt. Morgan, contains a number of amusing stories. Mr. Palgrave Simpson commences in it a story, "Worse than Death: a Tale of the French Revolution of 1848," which promises well. If we remember rightly, Mr. Simpson was in Paris during that event, and communicated some very valuable particulars to a London paper.—Mr. Tom Hood, second and fanciful, has contributed to *London Society* a capital paper on "Vers de Société," in which he introduces some good specimens of such composition, and a humorous paraphrase, by himself, of "Integer Vini." Amongst the illustrations of the number, "Boating Life at Putney," sketched by Mr. Chasemore, is a genuine piece of fun.

Miscellanea.

An Architect's Quarrel.—In the County Court at Hereford, a case sent down from the Queen's Bench, has just been decided. It seems to have simply been one of accounts between the parties, and the judge grumbled at being obliged to act as an arbitrator in it. Mr. Payton, the plaintiff, and Mr. Haddon, the defendant, had been in the habit of acting together professionally, and the matter related to a balance due on their respective proportions of commission. The judge gave a verdict for 12l. 12s. beyond the amount paid into court, each party to bear his own costs of the day. Subsequently, the plaintiff complained of being called upon to pay his own costs, or rather that the amount was hard upon him, inasmuch as all the witnesses had been summoned upon his side. His counsel said his fees must be paid, also 2l. 2s. to one witness, viz. 11s. 6d. to another, and so on. He really got worse than nothing, therefore, by his honest decision. The judge said the question of costs was already settled.

Society for the Encouragement of the Fine Arts.—On Thursday, 5th, Mr. H. C. Selous read a paper on "Greek Art." Mr. R. Westmacott, R.A., occupied the chair. After a survey of the progress of Phœnician and Egyptian art, and their alternative magnificence and meanness, he proceeded to show how by his wonderful imitations of the human form, truth to nature and exquisite finish, the Greek sculptor, though ignorant of anatomy, had arrived at the highest point of perfection, which the Greek painter, from want of a knowledge of perspective, had failed to attain. Grecian art was blind to the natural dignity of the human form, which was the element of every beauty and the perfection of every mechanical contrivance. His next adverted to the treatment of the male and female figure and its adornments by the artists of Greece, and compared the discernment shown in the criticisms upon the statues of Phidias with the indiscriminate praises awarded to half the pictures of the artists of the present day, who treated to titles and long quotations for their success. He concluded with some remarks on the great personal beauty of the Greek nation, their intellectual love of the beautiful, and adoration of the human form, which he contrasted with the present senseless shapes, so destructive of perfect form and motion—high heels and waspish waists, that nature abhorred quite as much as a vacuum.

The Proposed Bridge at Grimsby.—According to the plans prepared by Mr. Sacré, and examined by the council, the footbridge over the railway company's yard, at East Marsh, Grimsby, will be a wrought-iron lattice girder bridge of the latest construction. The principal span will be 72 ft. clear over the railway and sidings; side spans, 50 ft. and 33 ft., to provide for future extension of sidings. The pillars supporting the bridge will be, therefore, a considerable distance from the railway metals, and consequently the less likely to form an obstruction to a train requiring a wide berth. The bridge over the Old Dock will also be a girder bridge of wrought iron, having a 45 ft. span across the dock, and for this reason the piers for the swing bridge are to be on cast-iron cylinders, sunk to the bottom of the dock, and these cylinders 4 ft. in diameter, will be sunk to the required depth by excavating the soil within them, and they will be afterwards filled up and made solid with brick in cement or concrete. The remainder of the piers are to be cast-iron screw piles sunk to the required depth by means of capstans, on Mitchell's principle. The plan of cylinder piers was originally designed by Lord Cochrane (afterwards Lord Dundonald), thirty-five years ago, but has only within the last few years been carried out in general practice. The cost of the railway bridge, it is expected, will not exceed 2,000l., and that of the dock bridge between 7,000l. and 8,000l.

Further opening of National Gallery and British Museum.—In the House of Commons, on a motion for going into committee of supply, Mr. W. Allen submitted a motion in favour of opening the National Gallery and certain portions of the British Museum for the use of the public between the hours of seven and ten p.m., at least three evenings a week. The hon. gentleman had estimated the cost of lighting the National Gallery at 4,000l. per annum, and the British Museum at 6,000l., making a total sum of 10,000l. per annum. After some discussion, during which it was stated, on the part of the trustees, that the buildings were not constructed with the view of being lighted with gas, the Chancellor of the Exchequer reminded the House that a new National Gallery would in fulness of time be constructed in Trafalgar-square, and that perhaps a portion of the national treasures would be removed from Bloomsbury to a new building at South Kensington, and that both edifices might be so planned as to remove the obstacles to the introduction of gas, which existed in the old ones. Mr. Alderman Lawrence, having suggested that the British Museum should be opened every evening of the week during the summer months, Mr. Allen expressed himself satisfied with the ventilation which the subject had received, and withdrew the motion.

A New Synagogue for Newport.—The foundation-stone of a Hebrew synagogue has been laid on a site between Lewis-street and Francis-street, Pillgwenly. The buildings will comprise a centre and two wings. In the centre is the entrance to the synagogue, through a lobby, of T shape, which will be paved with mosaic paving. From this lobby stairs ascend to the ladies' gallery, which will be placed over the women's part of the synagogue; the lower part of the lobby are lavatories, and over them are lavatories for ladies. The synagogue proper forms the right wing. It measures 37 ft. in length by 22 ft. in width, and has accommodation for about 100 persons on the ground floor, and about forty in the ladies' gallery. The interior will be lighted by four round-arched windows in each of the sides, and a group of four smaller ones of similar character in the end. The whole of these will be filled with embossed and tinted glass. The sanctuary will be to the east, and form a raised platform, with ornamental canopy over, and have at the back the recess for the rolls of the law. The roofs will be of open timber-work, divided into panels by the bracing, and the whole stained and varnished. The left wing is the minister's house, which will be of a similar description. The style of the building will be round-arched Italian of simple character, built of black rock, with Bodmer brick-moulded dressing, and the whole will cost about 800l. The architect is Mr. B. Lawrence, and the builder Mr. J. W. Chack.

The Street Tramway Movement.—The two-miles-and-half length of street tramway has been opened between Whitechapel and Bow Church. The line is constructed by the North Metropolitan Tramway Company, and the works have been carried out by Messrs. Fisher & Parrish, American contractors, who have successfully supplied Liverpool and Dublin with similar conveniences. Owing to certain sewerage operations in South London, the Brixton line, the opening of which we have recorded, is nothing like so perfect an illustration of the system as this in the eastern district. The registered number of passengers is 46. The cars are about double the length of ordinary omnibuses, and are built to seat 22 within, and 24 without. According to the provisions of the Act of Parliament, workmen are to be conveyed at the fare of one penny on particular journeys, morning and evening. The horses wear a minimum of harness, nothing, in fact, behind the collars, and the drivers are clad in the smartest of liveries. The calculation is that one horse on the tramway can do the work of three on the common road. The car is stopped by the break, rapidly applied by the driver, and the vehicle is balanced upon an indiarubber spring. The Whitechapel undertaking has cost something like 4,000l. per mile.

Artists' General Benevolent Institution.—The annual dinner of this institution has been held in Willis's Rooms, and numerously attended. The Duke of Argyll presided. Since its foundation, 2,592 donations have been granted by it in sums amounting in the aggregate to 34,418l. The funds collected last year amounted to little short of 3,000l. This year an application having been made to Sir W. Tite, for a subscription towards carrying out a project for assisting the orphans of artists in connexion with the institution, he responded to the application by sending a check for 1,000l. In replying to the toast of the Royal Academy, Sir F. Grant said the Academy entertained the most friendly feelings towards all the other art institutions which held separate existence. The Academy had learnt with much interest that an orphanage was being established under the auspices of the Council of the Artists' General Benevolent Institution, and he had been requested by the General Assembly of the Academy to place in the hands of the secretary a check for 500l. towards that object. The toast of the "Two Water-colour Societies and the Society of British Artists" was proposed by Mr. Ginnard, and responded to by Mr. Colli Haag. The amount of subscriptions received at the dinner was announced to be 1,583l.

New Public Baths in Brighton.—The tenders of Mr. John Blackmore, of Brighton, to perform the builder's work for 920l. in the erection of the new public baths, and Messrs. C. & J. Reed, North-street, of 575s., to do the engineer's contract on that part of the baths which is to be built upon the site of the Infantry Barracks, at the bottom of Church-street, Brighton, have been accepted.

The Bradford Corporation Reservoirs at Horton Bank Top.—The work of constructing the two corporation reservoirs at Horton Bank Top is making progress. The reservoirs adjoin each other, one being on the north, and the other on the south side of the Bradford and Halifax road. They are both to be used as service reservoirs for the high-level district. Operations have been going on at the larger reservoir since November last. The smaller reservoir was begun about a month ago. At the larger reservoir more than two-thirds of the entire excavation has already been dug. The masonry intended to be put into the main outlet culvert is all in readiness. The east retaining wall and the lower puddle trench, which is 30 ft. deep and 21 ft. wide, have both been completed, and are waiting for inspection. The other puddle-trenches are also in a forward state, and a great portion of the masonry for the remaining retaining walls is worked and ready for use. The plant employed in the construction of the works is extensive. There are about 600 men on the ground, mostly excavators, and on an average they dig up and remove at least 1,800 cubic yards of solid earth per day. The work in the district, however, is under the personal supervision of Mr. Fogg, one of the contractors, and of the engineer.

North Eastern Children's Hospital.—The Princess Louise will open a bazaar for the benefit of the building fund of the North-Eastern Hospital for Children, on Monday, the 16th of May, and two following days, in the large room of the City Terminus Hotel, Cannon-street. The Princess of Prussia and Princess Christian have sent contributions to the stalls, as have many other ladies. This hospital has been hitherto one of the best managed in London as regards the arrangements for out-patients, which up to the present time has been partly self-supporting. We have a strong opinion as to the good effect of making the poor contribute something. It saves them from the degradation of pauperism. The dispensaries and gratis hospitals do an immense deal of good, but, as we have before asserted, they injure the moral fibre of the poor, and they induce the habit of receiving charity, which unfortunately is extremely difficult to cure. We shall be glad to find substantial aid given to the Shoreditch Children's Hospital.

The Decoration of the Central Hall, House of Commons.—Mr. A. Seymour, in reference to a question on this subject, said he addressed it to the Prime Minister, because of want of courtesy on the part of the member for the Tower Hamlets. Mr. Seymour then asked the first Lord of the Treasury what instructions had been issued to Mr. Poynter with regard to the decoration of the central hall, and whether the cartoons exhibited by that gentleman at the Royal Academy's Exhibition were to be returned. Mr. Gladstone said, that he understood that Mr. Poynter had been promised that he should be employed in decorating the central hall, but he had been requested by the First Commissioner of Works to await the decision, which had not yet been arrived at, as to the method of carrying into effect the designs contemplated. The cartoons alluded to were the property of the Government, and could not be permanently returned to Mr. Poynter. They would be employed for some public purpose.

Proposed New Drill-shed for Rotherham.—On Tuesday night, a meeting of the Drill-shed Committee was held in the Corn Exchange, Rotherham, to consider the advisability of offering a premium for the best plan for the drill-shed which it is proposed to erect on a plot of ground at the end of Norfolk-street. After considerable discussion, it was decided to advertise in the local papers, offering a premium for the best set of plans for the intended building. The drill-room is to be 90 ft. by 60 ft., with a light gallery running round three sides, and a band-gallery at the fourth side.

Lambeth School of Art.—The annual meeting of the students and friends of the Lambeth School of Art was held at the School-house, Miller's-lane, Vauxhall; the Rev. Canon Gregory in the chair. The Bishop of Winchester delivered an address in relation to art, and there was a numerous attendance. The Rev. Canon Gregory distributed the prizes to about thirty students. Mr. Cresy, Mr. H. Doulton, the Rev. Mr. Carnes, Mr. Sparkes, and others addressed the meeting.

Monumental.—Six years ago a number of gentlemen associated themselves together with the object of obtaining a statue of Mr. Gladstone for St. George's Hall. The erection of the design was subsequently undertaken by Mr. Adams Acton, sculptor, who was to receive 1,000*l.* for the work. The result has now been placed in a niche at the east side of St. George's Hall, immediately on the left of the statue of the late Earl of Derby. There has been a private unveiling of the statue, preliminary to the inauguration. Mr. Gladstone is represented in a standing posture, arrayed in the flowing robe of the Chancellor of the Exchequer. His right hand is crossed upon his breast, while the left lightly grasps a scroll. The Emperor of Brazil has refused a statue which his people are about to erect to him, and recommends that the money should be spent on primary schools. The statue, however, is to go on.

Communication through St. James's Park.—Her Majesty has given permission to open a road, as soon as possible, from St. James's street, through the end of the park, to Storey's Gate, for carriages, hired cabs and riders on horseback. When Parliament-street is widened, this new and temporary route may be closed. Mr. Ayrton, in announcing this in the Commons, said also that when the metropolitan authorities decided on such an outlay, the Mall might be continued to Charing-cross for a right line. No doubt, he added, the opening gives a complete vista of the Mall from the Strand would be a great improvement, and would be sanctioned by public opinion; but long since the Government had ceased to make improvements for the benefit of the metropolis out of the national exchequer.

The Auto-biography of an Octogenarian Architect.—Under this title, Mr. G. L. Taylor (joint author with Grey in the "Architectural Antiquities of Rome") is about to publish a record of his studies at home and abroad, during sixty-five years, comprising among the subjects treated of the cathedrals of England, France, and Italy; the temples of Rome, Greece, and Sicily, with explanations of their various styles—and plans, from measurement; also, incidents of travel, and sketches of other buildings and objects on his route, from notes and measurements during tours through England, France, Italy, Greece, and Sicily, in 1817-17, 18-19 (principally on foot), with re-visits in 1857 to 1868. It will be published through Messrs. Longmans & Co., by subscription, the number of copies limited, and can scarcely fail to be a work of considerable interest.

The Water Supply, Ramsmarsh.—The report of the Water Committee was read and adopted. It contained the certificate from Mr. J. F. Bateman, London, approving Mr. T. W. Doorn's detailed plans for the sewerage and water supply of the Ramsmarsh Local Board district. The chairman said that the plans which had been prepared by the surveyor, in connection with the Ramsmarsh water supply, did the greatest credit to him. He had pleasure in proposing that a donation of ten guineas be presented to the surveyor for his services in preparing the plans. This was unanimously passed.

Sea Water for London.—"A Learner" writes: "A sea-water lark of ample conference would be great boon to the inhabitants of London. Salt water might be forced up, on an elevated part of the coast, and conducted perennially, into a thermal reservoir. Many lives would be saved, many morbid states cured and prevented by it, and the physical condition of the population much improved. The surplus water might help to flush the sewers."

Royal Gallery of Illustration.—Mr. German Reed has secured the services of Mr. Correy Grain, a new vocal and pianoforte humorist, whose delineations of society in its various phases have been received for some time past with great relief in private circles. On Monday, May 14th, Mr. Grain will appear in a musical sketch written by himself, and entitled "The School Feast." "Age Ago" is to be withdrawn, to make way for a new Entertainment by Mr. W. S. Gilbert.

Bells for Melbourne.—A set of five bells have recently been given by Mr. John O. Wilson, Gorbals Bell Foundry, Glasgow, for the tower of the General Post-office, Melbourne, and to the order of the Government of Victoria. The tenor, or home bell, weighs 224 cwt., and the four smaller bells are for chiming the quarters.

The New Music Hall, Sheffield.—In consequence of the contractors, Messrs. Nelson Brothers, having requested to be relieved from their engagements for the masons', bricklayers', and excavators' work required for this new building, the directors have re-let the contracts to Messrs. G. Longdon & Son and the workmen have commenced to clear and level the ground ready for the excavation of the cellars and foundations of the building.

The Institution of Civil Engineers.—We are given to understand that the late Mrs. Appleton has left to the Institution a legacy of 1,000*l.*, payable at the same time as the legacy for a similar amount from her husband, the late Mr. J. G. Appleton, F.R.S., Assoc. Inst. C.E. It is believed that both bequests have been made "for the general use and benefit of the society," without being fettered with any conditions.

Opening of the Paris Fine Arts Exhibition.—The annual exhibition of pictures, sculpture, and other works of art, was opened on the 1st of May, according to custom. The total number of works shown amount to 6,494. The pictures are in oil number 2,991, and occupy twenty-three rooms (eight more than usual); they are all hung in alphabetical order.

Acoustic Science.—A Parisian scientist, M. Lissajous, has been profitably lecturing upon acoustics, and says the Musical Standard, particularly upon the phenomena of sound and flame, the emission of musical sounds by flames passed through tubes of proportionate length (as set forth at the Royal Institution of London), a process which he entertains a hope of bringing to some practical utility.

Sir Francis Crossley's Gift to Halifax.—The governors of the Halifax Infirmary have received that in consequence of the munificent gift of 10,000*l.* by Sir Francis Crossley, bart., M.P., towards a new building, all schemes for altering the present infirmary be abandoned. The estimated cost, exclusive of the ground, is 20,000*l.*

Palestine Exploration Fund.—The annual meeting of the Society for Promoting the Investigation of the Holy Land will be held at the Royal Institution on Monday, the 16th, at three o'clock. Capt. Warren will give an account of his most recent excavations.

Fall at Waverley Bridge Station, Edinburgh.—A portion of the south-east corner of the passenger-shed of the Waverley Bridge Station of the North British Railway Company, Edinburgh, has fallen to the extent of 40 ft. by 60 ft. Fortunately no one was injured.

Foreign Joinery.—It is generally understood that the greater part of the foreign joiners' work imported into this country is manufactured by machinery made in England, principally in London, and exported for that express purpose.

Roman Remains in Bath.—The excavations that are being made in Bath for the construction of the new Pump Room Hotel have brought to light some very interesting Roman remains.

A Proposed Canal.—A memorial is being submitted to the Birmingham Iron trade in favour of a canal from Gloucester to the Severn, navigable for vessels of 2,000 tons.

The Albert Institute at Windsor.—Her Majesty, on application, has stated that she will contribute 100 guineas to this Institute whenever the building is in course of erection.

The Pharmaceutical Society.—This society will hold a conversation in the South Kensington Museum on Wednesday evening, the 15th.

The Royal Society.—Of the fifteen candidates selected by the council for election to the honor of F.R.S., five are Doctors of Medicine.

Architectural Education.—The Voluntary Examination is now going on at the Institute of Architects. There are ten candidates.

TENDERS.

For alterations to the Old Eagle, Collyer-street, N.W.
Mr. T. H. Holworth, architect :—
Whistler..... £350 0 0
West..... 250 0 0
Kelly, Brothers (accepted)..... 500 0 0

For house, stables, &c., at Topwood, Caterham, for Mr. J. T. Redgate. Mr. Richard Martin, architect.
Quantities supplied by Mr. Frederick Sparrow :—

	House.	Conservatory.	Stables.
Roberts.....	£3,320 0	£275 0	£400 0
Blackmore.....	3,340 0	331 10	437 0
Folland.....	3,440 0	245 0	561 0
Turner.....	3,141 0	245 0	561 0
Williams & Son.....	3,178 0	277 0	467 0
Roberts.....	2,975 0	388 0	465 0
Heard.....	2,967 0	336 0	465 0
Ward.....	3,000 0	230 0	434 0
Clapham.....	3,000 0	241 0	465 0
Jarrett.....	2,960 0	246 0	465 0

For stables, &c., in Titchborne-row, Edgeware-road, for Messrs. Kesteven & Son. Mr. H. J. Northcroft, architect :—

Scott.....	£2,197 0 0
Wishup.....	2,190 0 0
Masley & Rogers.....	2,577 0 0
Higgs.....	2,003 0 0
Nutt.....	1,965 0 0

For erection of the Birmingham Edge Tool Works at Aston. Mr. William Hale, architect. Quantities supplied :—

Wykes.....	£1,120 0 0
Wright.....	1,078 0 0
Messrs. Webb.....	1,066 0 0
Messrs. Barnaby.....	1,310 10 0
Norman.....	940 0 0
Blore.....	940 0 0
Woodcroft (accepted).....	940 0 0

For alterations and repairs to dwelling-house and stables, No. 30, Bedford-place. Mr. Lewis Solomon, architect :—

Bridgman & Nuttall.....	£586 0 0
Wood.....	685 12 6
Flanagan.....	515 0 0
Davettier.....	324 0 0

For building infirmaries and fever wards, Wycombe Union. Messrs. H. W. Bannham, architects. Quantities not supplied :—

Ward.....	125 0 0
Spicer.....	465 0 0
Smith & Fletcher.....	465 0 0
Lusk.....	465 0 0
Unsettled.....	400 0 0

Accepted for landing-place and ship pier for the city of Rochester. Messrs. H. Henry Andrews, architect :—

Contract No. 1.—Landing-place, Street, &c.	£245 0 0
Clements.....	245 0 0
Contract No. 2.—Ship pier.....	120 0 0

For public rooms, offices, &c., at Tumbidge Walls, Messrs. W. W. Willett, architect. Quantities by Mr. Thos. Ladds :—

Edwards, Brothers.....	£30,703 0 0
Edwards, Brothers.....	9,000 0 0
Marwick & Thurgood.....	9,835 0 0
Stratton & Sons.....	9,835 0 0
Mathers.....	9,835 0 0
Booth.....	9,871 0 0
Mathers.....	9,871 0 0
Anscombe.....	8,960 0 0
Blackmore.....	8,965 0 0
Mathers.....	1,734 0 0
Days & Hume.....	8,770 0 0
Macey.....	8,769 0 0
Lodock & Bell.....	8,823 0 0
Nightingale.....	8,410 0 0
Denham.....	8,377 0 0
Walbridge & Denham.....	8,377 0 0
Higgs.....	8,224 0 0
Wilkinson & Oakley.....	7,797 0 0

For the erection of two semi-detached houses, Annesham Hill, High Wycombe. Mr. Arthur Vernon, architect. Quantities supplied :—

Silver & Son.....	£1,925 0 0
Honnor.....	1,768 0 0
Mathers.....	1,768 0 0
Woodbridge.....	1,750 0 0
Reverell.....	1,750 0 0
Reverell.....	1,740 7 4
Wood & Co.....	1,699 0 0
Ward.....	1,694 0 0
Mathers.....	1,690 0 0
Spicer.....	1,670 0 0
Chapman.....	1,664 0 0
Morrison.....	1,641 0 0
Nightingale.....	1,665 0 0

For three houses at Egham, for Mr. James Wye, Messrs. Maples, architects :—

Nightingale.....	£1,272 0 0
Crabb & Langford.....	1,268 0 0
Foote.....	1,260 0 0
Sawyer.....	1,153 0 0
Clayton.....	1,086 0 0
Bell.....	807 0 0

For sundry works at Cookham Union Workhouse, for the Guardians. Mr. C. Cooper, architect :—

West.....	£2,927 15 6
Silver & Son.....	464 0 0
Mathers.....	464 0 0
Beavell.....	446 0 0
Clayton.....	446 0 0
Parlo.....	423 0 0
Woodbridge.....	410 0 0

For two shops, Widmore-road, Bromley, Kent, for Mr. Wood. Mr. E. H. Badger, architect :—

Ames.....	£1,755 0 0
Gorrum.....	1,728 0 0
Fenny.....	1,680 0 0
Jerrard.....	1,665 0 0
Clayton.....	1,665 0 0
Peat & Baiding.....	1,595 0 0
Beaton.....	1,509 0 0

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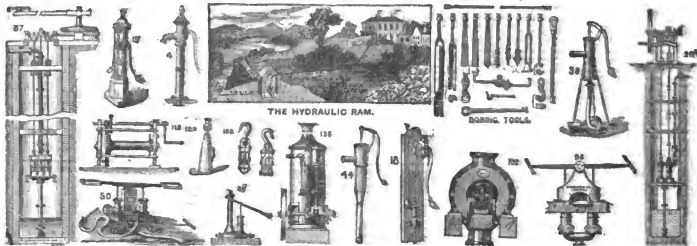
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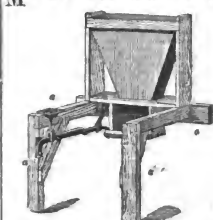
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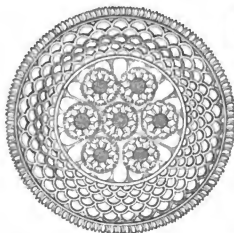
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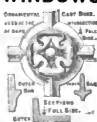
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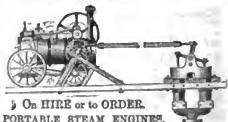


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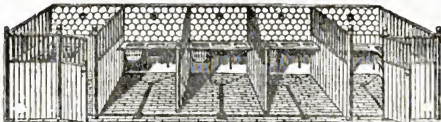
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The Builder.

VOL. XXVIII.—No. 1424.

American Professional Papers.*



WELVE years have now elapsed since the architectural profession in America gathered itself together, and founded an Institute of Architects.

This raising of the standard has placed the profession upon a legitimate basis; not only bonding together and making it a tangible reliable fact before the public, but creating for its head-quarters, an agreeable fellowship among its members, the possibility of action in unison, and pervading it with that subtle quality of cohesion, combination, and competition, known as *esprit de corps*. The last three years of the period in which the Institute has existed

have been the most fruitful, whence we may assume that those to come will be still more so. The progress made is most recognisable in the fact of the inauguration of annual conventions of one or two days' duration, in which the president gives an address, the reports of the local chapters are read, and papers on various professional subjects are read and discussed. As would be observed in the *Builder* of the 23rd ult., the Institute has issued a schedule of charges, endorsing as a starting-point the time-honoured fee of 5 per cent. usual on this side of the Atlantic, and some of the details in common with the schedule of the British Institute. It has also published the proceedings of the three conventions that have now been held, and the papers read on these occasions. But it is not by the work it has accomplished itself so much as by that it has called forth in other directions that we must measure the amount of usefulness it has performed. Since these annual conventions have been arranged, a number of professional journals, altogether independent of the Institute and of each other, have appeared upon the face of American literature. Directly architecture came to the front, in a word, sympathisers and supporters appeared on her right hand and on her left; and we must look upon the position so assumed and thus assured as one of great promise.

We have received the proceedings of the third annual convention of the American Institute of Architects, and the current numbers of most of

* Proceedings of the Third Annual Convention of the American Institute of Architects, held in New York, November, 1868. Western & Co., New York.

The Architectural Review and American Builder's Journal. By Samuel Sloan. Claxton, Remsen, & Heflinger, Philadelphia. Vol. II, Nos. 9 and 10. March and April, 1870.

The American Builder: a Journal of Art. Charles D. Lacey, Chicago. Vol. II, No. 3. March, 1870.

The Builder. The Industrial Publication Company, Broadway, New York. Vol. II, No. 2. March, 1870.

the journals to which we have alluded. They show us the great, busy, work-a-day America, with its tall warehouse-looking dwellings and tramway-laid streets of bold-faced, self-asserting stores, in every respect indicative of the fact that trade and traffic are the main considerations taken into account in their eager, flaunting, pushing continuity; and they show us, too, that other America, bonafide as boundless, that had rest and release in its for troubled spirits in the days of the States, the Old Colony days, the land of Miles Standish and John Alden, that our forefathers spoke of as "our plantations in America." This last phase is most apparent in the paper read by the president of the Institute, Mr. Richard Upjohn, on "The Colonial Architecture of New York and the New England States." He tells us that only a few of the colonial buildings remain, but they are striking evidences of the taste and skill of the period to which they belong, and identical in style with contemporary buildings in Holland and England. If the Institute should be able by its influence to preserve these interesting fabrics from demolition, it will be doing a good work. As pictures in the history of America, they are absolutely priceless; nevertheless, their number is gradually getting smaller and smaller. In the face of the strong feeling there is in our own country in favour of the conservation of our ancient buildings, it is scarcely to be credited that this comparatively new country ruthlessly raxes to the ground the architectural links that connect it with the Old World. Even some of the old churches of the early colonists have been destroyed: relics we should have deemed as precious as Bazon remains are in this country. Their ancient features, with their refinement of quaint simplicity, associated with so much that is worthy in the history of the sons of Japhet, have been considered as nought; as so more, in fine, than the rosemary odour, "commingled with pansies," "the beautiful Puritan pansies," that Edgar Allan Poe would have found lingering in them. The North Dutch Church, erected by the Dutch colonists in Fulton-street, was destroyed last year; and the South Dutch Church, now used as a post-office, is doomed. Mr. Upjohn remarks that St. Paul's, one of the most prominent landmarks in the city of New York, still stands in almost pristine vigor. We trust that it may long remain to do so, for a companion edifice, Old Trinity Church, has been already thrice rebuilt. All the domestic buildings of the primitive days of this city are either utterly lost or so faded as to be of little interest; but Brooklyn is more fortunate in still retaining some of the picturesque homes built by the earnest, stout-hearted, faithful colonists. Mr. Upjohn records, and we are glad to pass on the word, that there is an old house in South Brooklyn, on Fifth-avenue, near Greenwood Cemetery, with the date 1699, in wrought-iron figures forming the anchor heads, on the outside. He says,—"It is a brick building, built, as was usual at that time, of bricks brought from Holland, and laid up with mortar probably made of shell lime. It is remarkable that the gable walls of this house are without coping, but are finished with bricks standing angle-wise, and forming the sigsaw lines still seen on the gables of houses in Holland and Belgium; yet the mortar joints, exposed to the weather 200 years, are still intact." The period of this erection will be better realised if we remind our readers that it was only thirty years after Charles II., by the grace of God, King of England, Scotland, France, greeting, granted to his "dear and entirely beloved cousin, Prince Rupert," and others, the sole trade and commerce of Hudson's Bay. Architecture and the art of building have not arrived at so much perfection in America that the loss of such an example can be afforded; and we must add, again, the Institute will advance its interests by

protecting from demolition the Old-World homes that were transplanted with so much effort and care. Boston, Cambridge, Newport, New London, and Connecticut also retain attractive examples of genuine domestic architecture, of which, Mr. Upjohn suggests, the members of the academy of design should make careful studies, as they will be buried in oblivion in the course of another century; which prophecy all well-wishers of architecture in America will desire may not be fulfilled. Later buildings are apparently valueless. We quote the president of the Institute as a verification. "The ecclesiastical architecture of the Anti-Revolutionary days, was, in almost every instance, far superior to that of the period subsequent to the Revolution. Then every trace of refinement, of truthful expression and fitness of purpose, was lost sight of. Not a vestige of sacred thought can be discovered in the houses of worship of this period." Besides this interesting catalogue of the Jacobian architectural antiquities of America, there were four other papers read at the convention, besides many documents relating to the management. Mr. A. C. Cress read a technical paper "On the Theory, Functions, and Incidental Uses of Chimneys," in which he worked out the intimate relation of science to architecture; and Mr. William Ware read a paper "On the Relations of Science and Art in Architectural Study," in which he disapproved the too literal cultivation of this intimacy, and argued that an artistic spirit rather than a scientific education should be looked upon as the chief instrument in the hands of a student; the conflicting opinions being, to some extent, reconciled in the discussion that followed, by Mr. Peterson, who drew from them the conclusion that the proper method of education lay half-way between the two opposites. The third paper was by Mr. Hatfield, "On the Elementary Training of the Architect," in which he fancifully and skilfully treated his subject, claiming for architects that they are workmen upon the palace of architecture; and the fourth, or closing address, was a paper upon "Professional Guilds," by Mr. Godkin. This last-mentioned gentleman remarked that probably there has never been a time or place in which man did not feel the loneliness of standing alone, and did not endeavour to associate himself with others of common tastes. The early Christian brotherhoods and the guilds of the Middle Ages offered this association, when society otherwise presented little more than a joyless existence. Professional guilds were the result of the same yearning for fellowship, though founded upon a different basis; the trade guilds making most of the comfort and condition of the workman; the professional guilds considering of foremost consequence the skill, fidelity, and uprightness of its members. And when the French revolution brought to the surface of things a re-volt against associations, and a feeling in favour of individualism, it broke through most salutary discipline. The formation of professional associations similar to that of the Institute, he continued, would be of great service in the concentration of opinion in aid of morality, and in the growth of the strongest of the social forces, "that loyalty of man to man, that proud concern for the worth and repute of all, and of all for the worth and repute of each," the French only have found a name for, in *esprit de corps*. With such hopeful strains closed the convention; the proceedings generally showing complete culture, a high appreciation and feeling for the wonderful past, as well as great and good aims for the future.

The journals, collectively, show us America busy, bustling, and boasting of "whipping creation." But amid the clank of cog-wheels and cleat of steam-hammers, the rush, and wear and tear of countless industries carried on to their, apparently, uttermost limits; the building of new towns, and increase of old cities, we come upon facts that touch our most cordial sym-
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thies, and evoke our warmest admiration. Looking first into the *Architectural Review*, which is a large octavo, in a pale dove-colored paper cover, with several illustrations of buildings, we read, "There is no reason for despondency among architects generally. There is unlimited capital in the country ready for investment, and there is likewise a growing comprehension of the greatness which vast, chaste, and elegant construction confers upon a rising nation like this of ours." And the writer proceeds to state that philanthropy, religion, education, and trade will all avail themselves of the services of architects as among the best means to further their own interests. Again we read, "Where there was one architect some ten years ago there are now fifty, and in the Boston States alone, where, a few years back, the designs required for a building were supplied by the eastern and northern cities, local architects are to be found in every town of ten thousand inhabitants. . . . The community at large are more interested in the progress of architecture than is supposed."

A similar cheerful tone pervades both the numbers of the review before us; which, for the rest, are filled with words of American work, mixed with papers upon European subjects, illustrations of both novelties and antiquities, with here and there an extract from European publications. Unsurprisingly, therefore, both are told of the building of a new town, consisting exclusively of gentlemen's residences, with from one to two acres of land attached to each, at Bryn Mawr, an extension of the small Welsh settlement that originally gave name to the romantic and hilly location; which new town is said to be sure to become the resort of the wealth and fashion of Philadelphia, and furnish employment to architects, builders, and horticulturalists for the next few years; and on another page we hear of the burning of a great tract of business premises in the centre of the town of Cheltenham, with the erection of twelve new houses on the site of the conflagration before the smoke of it had cleared away! Among local subjects is a pleasant paper on Philadelphia fifty years since, which describes several of the old brick houses built on marble basements, which were standing at that date, but which have since been razed; and the writer complains that the brown stone houses built upon their sites are not so hospitable-looking as those old mansions were, being tawdry, and exhibiting but little difference from the store fronts of the business streets. He says, deplorably, that the same style of front and ornamentation obtains for both stores and dwellings from the Atlantic to the Rocky Mountains, and from the Kennebec to Mason and Dixon's line. Altogether, throughout the review we perceive this feeling that better things can be done, and must be done, than Transatlantic fashion has accomplished in these latter days. And the writer, we must mention, speaks in high praise of additions to West Philadelphia, consisting of 138 large dwellings, three-fourths of which are of white marble, and all of which have been erected by one builder in the space of eighteen months. We must congratulate Mr. Samuel Sloan, the editor, upon this wide field and favourable season before him.

The *American Builder* is a quarto, in a faint salmon-colored cover, rather less quietly and unostentatiously professional than the *Review*; and with many more advertisements relating to technical objects in it. The writer, too, has a good opinion of a Boston contemporary, that it is "an indispensable exchange." The number before us has four illustrations; the first being the new Drake Block of Four-storied Houses in Chicago, with Store on the pavement level below them; a Wood Villa, built in the Ontario hills, at Maywood, which has all the appearance of being made of cast iron; in the sister absence of the characteristic features that work in timber should present, so charmingly illustrated, for instance, in the Castle of Coburg, shown in our columns on the 29th ult.; a design for a small Church, in timber, with a Venetian treatment, by the Messrs. Upjohn; and a French-Jockey design for a Villa, with a verandah and so-called "truncated roof." The letter-press commences with contributed papers, the first being from Pers, and concerning Persian workmen; and the others philippics against some of the errors of consistency. Then follow a chapter on science in the chiefly astronomical; communications to the editor; miscellaneous matter, — so miscellaneous, indeed, that one of the items, stating the trigonometrical survey of England and Wales is completed, we perceive is given twice over; a column

called the What-not; another as eccentrically called the Editor's After-dinner Hour; and then notices of new publications, including the proceedings of the Convention held in New York, some items in the Editor's After-dinner Hour that we come most in contact with the speculative, rapid, and innocent industry of our cousins, and their eager acceptance of novelties. One line tells that 26,565 new houses have been built in Iowa since 1867; another, that the third year of the Convention is fast dying, and that, a displaced house has been saved in two, and the most obstinate claimant continues to reside in his half; another, that the largest bed of slate in the world has been found on the St. Louis river; 15,000 tons of steel rails will be laid this year on the Grand Trunk Railroad; 500 miles of snow-sheds erected along the Union Pacific Railroad; a submarine cable is to be laid along the Pacific coast of South America; the proposed Art Museum in New York is to be a success; houses can be covered with the new paper building material for a few pence, and so on. These good facts and wholesale quantities make the foreign news items appear of the smallest and weakest description. Even the trigonometrical survey so complementarily mentioned, appears a dwarfish undertaking compared to the speed, the space, the accuracy, and the figures of the survey on the side of our Atlantic. After noticing a Boston proposition to cut a tunnel 1,900 ft. long through the most frequented portions of that city in one column, the progress of the Suez tunnel, mentioned in another as now bored to a length of 715 ft., appears puny. After reading, at the top of a page, that the bridge just completed at the Ohio, at Louisville, is a mile long, exclusive of approaches, the bridge to be built at Malden, Essex, mentioned lower down, must be looked upon as a toy. After reading, too, of a new locomotive, constructed in Taunton, Mass., to run backwards and forwards alike, being double in all its parts, with the engine's standing-place in the centre, a wire tramway, five miles long, described as newly laid upon the green downs of Brighton, appears a trifle of the order of retrogression. And so on, from column to column. Everywhere we are impressed with the conviction that there are still points upon the earth, as great as any that have gone before.

When we take up the misss-covered journal, entitled, *The Manufacturer and Builder*, we expect to step nearer to the workshop, and are accordingly not surprised to be confronted on the first page with diagrams showing the latest improvements in locomotives, for the manufacture of iron, with the assistance of a steam-engine for driving the apparatus. This information, suggestive of inconvenience from heat, is shortly followed by an article on laying bricks and stone in freezing weather, the title of which is, "How to keep the mortar cold." The writer of this last declares that a vast amount of work is done that is frozen up tight in less than twelve hours after the mortar is used, and that there are scores of brick houses erected in Brooklyn and New York, with scarcely strength to stand from this cause. "It will be continued," we have in mind several instances in which portions of the walls were crushed to such an extent, that the entire structures had to be taken down to the very foundation, simply because the walls were built with mortar that was allowed to freeze before the masonry was laid. One could not, therefore, does the *Manufacturer and Builder* speak on this head. European applications and discoveries are carefully noted, and in one instance, we perceive, a translation is given of a German paper "On the Application of Gaskets for Submarine Constructions." Photography, distilling, weaving, the stored loss of power by the crank motion, are touched upon among other subjects equally disconnected; and there are various articles relating to buildings, in most of which can be traced a manufacturing idea of introducing iron in every capacity into the structure of all sorts. One contributor, described as a distinguished architect, suggests that galvanised iron should be used for moldings along house-fronts, chimney-tops, mantel-pieces, chimney-flues, &c., "so that the whole fireplace, from the fire-grate upwards, including everything to the chimney-top, could be bought of any standard size to be used in the building to be built, making a set of complete outfit from floor to roof." Further on, there is an illustration of an ironclad house, coated with plates of iron like an ironclad ship, built in One Hundred and Seventeenth-street, New York, which is the first

instance where the plan has been adopted for a first-class dwelling. The benefit supposed to accrue from the adoption of this principle is durability combined with decrease of cost; because the structure behind the sheets of iron can be finished in a much rougher manner, and made of commoner materials, than it would need to be if exposed. This chief merit is thus summed up. "An elegant front may now be ordered in New York, Boston, and any other part of the world, by any builder can then connect it with the outside of the coarsest walls, while they are in process of erection, and in this manner a residence of metropolitan aspect may be constructed almost anywhere; — of too metropolitan an aspect, we should suppose, to be spoken of with the rectangular buildings also spoken of that are erected in twelve working hours complete. These last-mentioned ready-made houses formed the chief part of the material carried westward on the Pacific railroad, the *Manufacturer and Builder* tells us, and were transported in bundles of twelve dozen, twelve each. A contractor, according to "an exchange" quoted, is now loading out seven meeting-houses, of this type, for the Presbyterians along this line of rail. Thrown in, gracefully, amidst suggestions of such angelicality, is a chapter, with illustrations, taken from the *Illustrated London News*, of the new pre-arranged homes may be made beautiful with chromo-lithographs in home-made frames, and flowers in home-made stands and cases. And the moss and ferns and swamp grasses seen the page, and cease us to lay down the journal accordingly.

A fourth journal, the *Technologist*, is in still earlier year than the rest. We have the March number before us, which is but the second of the first volume. Engineering holds the first place in it, manufacturing the second, and building the third. Like that just described, it engraves upon the technicalities of these pure subjects a somewhat lighter nature, that are likely to enlarge its sphere of usefulness. Thus, though the methods of construction, comparative tests, technological education, Boulay's new battery, and kerosene explosions are fully discussed, we find the girl of the period, the books of the month, and periodicals for the young, described for the reader's recreation. In a notice of the Winter Exhibition of the Society of Painters in Water-colours, we are struck with the choice of subjects made by the artists. Their own mountains, castles, and falls, and peiries and "painted rocks" are passed over; not a scene from Washington Irving, "Evangeline," "Hiawatha," or Walt Whitman is given; but Haddon Hall, the Scottish Highlands, Stratford-upon-Avon, a Surrey By-way, and Westminster Abbey, have found firm penons and patrons. The election of a new president of our Institution of Engineers, with his inauguration, and the queries a noble more prominent place than an account of a meeting of the American Society of Civil Engineers. When statistics relating to the healthiness of various occupations are given, it is our own registrar-general who furnishes them; when roads are discussed, Mr. Bridges, of the Admiralty, is an authority; and when drainage is urged upon New York, the system adopted in Paris is proclaimed. In a word, the most friendly appreciation of all things English and French, and kindly competition with them into the bargain, are apparent upon every page. Nevertheless, there are several queries that are not answered, and which ought to be given. And we feel, as we close the last of these professional papers, that have an aspect that is neither English nor French, yet like unto both, that they will be the means of very satisfactory ends.

Institution of Surveyors. — At the ordinary general meeting held on May 26th, a discussion took place on the paper by Mr. E. Hyde, entitled "Parochial Assessments," and was taken part in by many members. The following resolutions were submitted and were declared to be carried: As member — Stephen William Williams, Esq., Radnorshire. As associate — Robert Charles Galling, Needham Hall, Elm, Cambridgeshire. The next meeting will be held on Monday evening, May 23rd, when a paper will be read by Mr. B. Hall (Vice-President), entitled "Notes on the Locks and Aids to the River." The chair to be taken at eight o'clock. The annual general meeting of the Institution, to receive the report of the council, and to elect the officers for the ensuing year, will be held on Monday, May 30th, at three o'clock.

BRIGANDAGE AND ART.

Is this a fit title for an article in a journal devoted to science and art? Is brigandage a fit subject for discussion or dissertation in these pages? Can we, as practical men and artists, find a legitimate theme for consideration in the nefarious doings of outlaws in distant countries? Can there be any connection, even the most remote, between brigandage and art? Can the deeds of such miscreants affect us in any way? Can we have relation to our professional studies?

In answer to the many who will ask these questions, we reply to them all affirmatively. In the first place, we wish to record, in common with our fellow journalists, our detestation of the late massacre in Greece. Secondly, as practical men we would endeavour, from our own experience, to suggest a remedy for the future. Thirdly, as long as the ruins of the finest temples are frequented by robbers, so long will the study of Greek art from ancient monuments be pursued under disquieting conditions.

We desire to put on record our abhorrence of the late evil deeds in Greece, as men, especially as Englishmen, and also as artists. As men, we are affected at the cold-blooded murder of defenceless travellers; as Englishmen, we are indignant that they should have been killed in the kingdom of Greece; which we have spent so much blood and money to establish, should harbour semi-political bravos, who shed the blood of some of the gentlest and best amongst us with deliberate malice; as artists, we are grieved, because these late events bring prominently before us the unfortunate fact, that all these countries which possess the finest works of antiquity, and have, therefore, the greatest attraction for the archaeologist and architect, and which present the most picturesque and the most richly-coloured scenery, are and are therefore rendered after by the painter, are haunted by brigands of the worst class. Magna Græcia, Sicily, Greece, and Ionia are infested by gangs of robbers, who will shoot you down from their ambushes, or drag you after them for months among the mountains, to suffer every privation, until your friends can communicate with them and furnish them with some thousands of pounds as your ransom. In these countries no sketching excursion can be undertaken, no scientific expedition carried on, without the trouble and expense of guards, who are not always to be relied upon for protection. It surely, then, concerns us, as artists and archaeologists, to look upon this matter of brigandage with regard to the interests of art; for all amateurs of architecture and picturesque scenery would like to have the privilege of visiting the ruined fæces of old without the chance of being popped at by a brigand from behind a column, or being carried off into the mountains, and having their bodies afterwards popped off and sent in letters to their friends, by way of expediting the business of reanimating.

This state of things has lasted for a long period. The traveller in search of the remains of Greek art is everywhere checked by brigands. When at Naples, the adventures of Mr. Moore are depicted to him by kind friends, to prevent him from risking his life for a peep at Pæstum. In Sicily he hesitates about making an overland journey to Agrigento and Segeste, on account of his landlord's report of the state of the country; and even when he makes up his mind to drive to Moerale, to the great host of the Trinacria, standing on his threshold, bids him a most solemn adieu as though for the last time, and washes his hands of the departing guest, after giving him all necessary warning.

It is true that the Italian Government has stated that the country is only one of the basest in Sicily, and that this consists of only forty-five members; and we remember, upon making inquiries from the commandant at Reggio, some few years ago, as to the state of brigandage in his district, that he told us that it did not contain a single bandit; but did not the Greek Minors, or the desolate coast of the unfortunate travellers that there was not a brigand in the neighbourhood, though there were the thirty of them in ambush within ten miles of them at the time they spoke?

When the traveller goes further eastward along the Firmus, he finds that the road to Athens, of only six miles, is patrolled by guards; that he cannot stroll a mile out of the town without danger; and that a journey to Rhegium or Corinth would be madness.

As long as we can remember Greece, brigandage has been its chronic complaint. At the

time of our first visit to Athens, during the Crimean War, and though there were two regiments,—one English and the other French,—stationed at the Piræus for the purpose of maintaining order, about a hundred peasants and farmers were seized by Klephts, stripped of all they had, and looked up in a church one Sunday during our stay. And it was also reported,—we do not know with what degree of truth,—that some of these regiments were kidnapped when out of control. (On the occasion of our second visit, we heard that a party who had landed near the Isthmus of Corinth from an English nobleman's yacht (Lord Selkirk's, we believe), had narrowly escaped being carried off. Our fourth visit was just after the release of Lord Harve, and party (who were captured in 1867 by a chief whose death is recorded in a telegram just come to hand). About this time Kitto's band carried off the Minister of Finance, and murdered a priest who was about to betray them; subsequently various landed proprietors were carried off and ransomed. Now the culminating point of infamy has been reached; and we sincerely hope, for the sake of humanity and of art, that England, either alone or in conjunction with other European countries, will stamp out Greek brigandage for ever.

In all countries there are land sharks who prey upon the weak and defenceless, such as burglars, grottoes, footpads, and sharpers of all kinds, until lately known amongst us by the appropriate name of "Greeks," either after the crafty Ulysses and his accomplices, or after those supposed to be his descendants, but who are in truth a mongrel race with much Italian and Turkish blood in their veins. In half-civilized countries where the governing powers are weak, or the administration corrupt, these miscreants assume a bolder character, and live as open war with society, especially with those travellers who seek the hospitality of their country. But in most countries it does not proceed to the extent of wantonly taking away life. The Bedouins, who strip you to the skin and leave you to find your way to a neighbouring town clothed only in a hat and shirt-cloth, is an angel compared to the Klepht, who shoots you down without compunction because you are footsore and cannot clamber over jagged rocks as quickly as he wishes. Yet the Klepht has received some education; can read and write, goes to church, is on visiting terms with people who have held office, and probably banks at the same house that you do. He takes a keen interest in politics, and is delighted if his exploits lead to the dismissal of the minister, and give his friends of the opposition a chance of place. We in peaceable England cannot well realise such a state of things, except by supposing that when Disraeli was in power Bright's bands would take to the road, and be heard of somewhere near Blackheath; and that when Palmerston was in power, Newington would be a Turkish camp, and the British himself in the reins of some old money-bag, and daily forth to seize foreigners in order to bring the Pope to his terms.

Greece has been protected long enough from the attacks of the Turks, let the three Great Powers now protect her from herself. Brigandage is a gangrene which affects the whole society, proceeding from a savagery innate in the people. The "merchant prince," who gave his thousands to propagate rebellion in Crete, though by a fortunate turn of the wheel, he has been enabled to cast his "fantasella," and come to live in Hyde Park, is a gangrene which affects the whole society, proceeding from a savagery innate in the people. The "merchant prince," who gave his thousands to propagate rebellion in Crete, though by a fortunate turn of the wheel, he has been enabled to cast his "fantasella," and come to live in Hyde Park, is a gangrene which affects the whole society, proceeding from a savagery innate in the people. The "merchant prince," who gave his thousands to propagate rebellion in Crete, though by a fortunate turn of the wheel, he has been enabled to cast his "fantasella," and come to live in Hyde Park, is a gangrene which affects the whole society, proceeding from a savagery innate in the people.

We have supposed a traveller searching for remains of Greek art at Naples, Palermo, and Athens being checked at all these places. He then proceeds to Ionia, and lands at Smyrna. If he land in the winter time he may travel without fear of molestation, and visit Ephesus, Mileta, Magnesia, and Tralles, without meeting a hostile pretence; but if he go in spring, summer, or autumn, he will hear of robbers at every stage. Guards, often unreliable, will be forced upon him, and he will be fortunate if he return with a whole skin and a full pocket. There is a strip of mountainous country, extending about ninety miles south of the Gulf of Smyrna, as far as the coast of the Messæus, containing the most important ancient sites, and inhabited chiefly by Greeks, which is annually infested by Greek brigands from the islands. They land in bodies of twenty or thirty, headed by an experienced leader, who is well acquainted with the

mountain paths. They subvert on provisions supplied them by the villagers (who sympathise with them, as they consider their operations semi-political), with an occasional sheep stolen from the flocks of the Turks in the plains. From their mountain eyrie they watch the unwary traveller through their glasses, and pounce down upon him when they think there is an opportunity for a favourable coup. Their season begins in May, and they are expected to keep the settled and peaceably disposed inhabitants in a constant fever of alarm. The Smyrna merchants who have country houses at Bojash and Bourash buckle on their revolvers, clean up their rifles, and are no longer content to jog to town singly on their slow-paced donkeys, but travel in parties and mount on faster steeds. Ladies no longer venture to take walks in the country, and the owners of *chifas* confine their promenades to their farmyards, or, if they venture beyond them, go attended by a whole posse of guards. It was from a chiflik that Mr. Van Lennep, the nephew of the Dutch Consul in Smyrna, was carried off in the spring of 1868, and only released on the payment of some 1,500*l*. The periodical invasion of barbarians has lasted as long as we have known Smyrna; that is to say, for fifteen or sixteen years. Dr. Anagnostis, a resident, was taken off for about a fortnight, and he has related to us his experiences with the rascals, which were, to say the least of them, painful. The Turkish police are, on the whole, more active than the Greek soldiers. The band which took off young Van Lennep was happily surprised while at breakfast in a few caravans, headed by the *Mudir* of Sokia; three of them were shot, but the others escaped.

Now all this annual panic might be prevented and security guaranteed by a very simple measure—viz, by stationing a cordon of a hundred men, armed with breech-loaders and revolvers, in small black houses along the coast in each, for the distance of ninety or a hundred miles. The posts should communicate with one another by means of telegraphic wires, so that the appearance of a suspicious-looking couple in the offing, or the landing of men of doubtful character might be signalled along the whole line. The small expense of the maintenance of these would be balanced by the relief that would be given to merchants and to travellers. The Turkish Government would naturally object to the introduction of foreign troops for this purpose, but a strong pressure put upon the Porte at this juncture would make it open to this improved policy. The force should be paid by the Turkish Government, composed, as far as possible, of Europeans, and officered by them, and should not be answerable to local authorities, but only to head-quarters, at Constantinople. If we could see a strong pressure put upon the Porte at this juncture would make it open to this improved policy. The force should be paid by the Turkish Government, composed, as far as possible, of Europeans, and officered by them, and should not be answerable to local authorities, but only to head-quarters, at Constantinople. If we could see a strong pressure put upon the Porte at this juncture would make it open to this improved policy. The force should be paid by the Turkish Government, composed, as far as possible, of Europeans, and officered by them, and should not be answerable to local authorities, but only to head-quarters, at Constantinople.

For the future interest of art and archaeology, may brigandage be put down by an armed occupation of Greece, and by the establishment of a strong consular guard along the shore of Ionia, which is the only part of the Turkish Empire regularly frequented by Greek brigands.

THE ARCHITECTURAL EXHIBITION.

RETURNING to the Collection, in Conduit-street, Mr. W. Lee shows in a large and well-constructed drawing the "Interior View of Large Hall," in one of the premiated designs for the Manchester Town-hall: a very large proportion of ornament is so equally distributed as to have a quicker and less tawdry effect than is sometimes exhibited for rooms where the eye is not to be attracted by ornament not so impartially distributed. The exterior views (93 and 94) are even better executed than the interior, but, for external work, somewhat over-rich and wanting in repose; the eye can rest nowhere. The style is decorated, but with nothing to remark upon in the treatment. Of the like kind is the design shown in a totally different style of drawing, are the designs for the "Fyrmouth Guildhall and Public Offices," by Messrs. Fogarty & Drew (101, 102, 103). This is a well-intended design as to plan and general conception. The Guildhall and Offices are placed at opposite sides of a central axis, an open hall connecting the two blocks, and with a centre gateway, runs along a third side: the whole is well placed and considered for general effect and balance of composition,

but in detail and style it belongs to a class of designs the merit of which appears to us to consist mainly in a happily-acquired manner of using and combining Gothic features and details, without any great amount of originality. A contrast in this respect is Mr. C. F. Hayward's design for the Fitzrovia Guildhall (164-167), though perhaps wanting in dignity, and certainly not the design to win the hearts of a committee. This is a quiet and unpretentious Gothic building, shown in very good ink etchings, with a long two-storied front of a late type of Gothic, with square-headed windows on the second and the lower story, and pointed windows under square labels above. [The small and sketchy perspective view shows a fairly harmonious grouping, totally without trickery or pretension; though a more elevated centre feature would have improved the principal elevation, and, in matters of detail, the foliage is somewhat clumsy and heavy, and in the arched porch the arrangement by which a pier comes in the centre, instead of an opening, is unhappy. But we commend these drawings to the attention of students, rather than the more striking and seductive towered productions in the shape of town-halls, which so often attract the eye. Messrs. Fogarty & Drew's design for "Municipal Buildings, Belfast," shows a clever planning of a triangular site, especially in the manner in which the large semicircular entrance-steps and colonnade are got in: the plan is worth study, and the design, though a commonplace Roman type, with engaged columns and a balustrade supporting some "sweet things in pots," is not without merit in general design and in the contrast of the large and small cupolas, the latter of which is very elegant. Of course, gentlemen who are willing to work in such totally opposite styles to that of their country, Guildhall design, to suit customers, cannot expect to succeed well in both, and may very likely end by succeeding in neither, artistically at all events. Mr. R. Miller's "Design for Government Buildings" (166) is an instance of the fact that very large drawings do not make necessarily very grand designs. The general treatment is of a very ordinary Gothic type, and the buttresses round the dome, a somewhat novel feature, have been designed without proper consideration as to their effect upon the outline of the principal feature, and reduce to the aspect of something like a pyramid.

Among designs in the class of domestic architecture, one of the first which we notice in going round the Architectural Exhibition room is a very small drawing, by Mr. Edis, of a "Half-timbered House in course of erection at Bexley, Kent" (19). The employment, in general, of this not very durable style of architecture, can scarcely be recommended: however, both on practical and artistic grounds, it is much more in place on such a country site as is here indicated than in the streets of a town; and no one can deny that its architect has made out of this little house, with its picturesque outline of roof and corbelled out upper story, a pleasing design of the class. The same architect exhibits the south-east view of a mansion in course of erection, the north-east view of which is exhibited in the Academy (753), and was favourably noticed in our review of that collection; the present drawing (62) more than confirming our previous good opinion of the design. A more ambitious and, from its size, important work, is "Glenburgh Towers, in course of erection near Killarney," designed by Messrs. W. Godwin & Cresp, a regular set of dwellings, whose crowning bastions and parapets start up with our associations with Killarney, though, perhaps, they may be deemed only too unalike to the present and recent anxieties of dwellers in the Green Island. The look of the place, with its square windows and its chimney, is not inviting, for all the good colouring of the drawing. Mr. Tenlon's "Additions to Branch Hill Lodge" (66) shows a quietly picturesque red-brick house, of originality of outline and grouping, and a good suggestion as to the treatment of a brick garden-wall, which rises from above the centre of its height, is battered up to a thinner open brick balustrade at the top, with solid piers at intervals. The elevations and plans of "Cowhill House, Dumfriesshire" (100, 101, 102), by Messrs. Carter & Lyon, show of course a mansion with a "corbie-step" gables which we should presume are imposed upon architecture by their Scottish clients, who appear to think there would be "na lack about the house" without these architectural features. A certain pictu-

resqueness of outline is inseparable from this style of treatment; and in this, as in other respects, the mansion in question does not differ in general design from a great many other Scottish mansions; save that in the millioned windows there is more look of the refinement of southern domestic architecture than is seen in northern houses. We may comment, by the way, on the great predominance of the square millioned window in the domestic as well as in other designs in the Exhibition, in situations where, some years ago, architects who used a corbie-step window at all would have employed towers. It should seem that the architectural profession are coming to the conclusion of a well-known contemporary novelist, quoted in our columns some time since, that "square millioned windows afford a greater aggregate of happiness than any other form of window." The plan of Messrs. Carter & Lyon's mansion presents nothing special for remark, except that the principal windows of drawing-room, business-room, and library, all have the same aspect, which, probably, cannot be an equally good one for all of them; but as the architects have not given to the points of the compass on their plan, it is to be feared they do not reckon at its proper importance the planning of a house with regard to aspect. Without a north and south point given we cannot undertake to pronounce upon the merit of a dwelling-house plan. Another of these flowing Scottish strongholds is the "Boswell House in Argyleshire" (160), by Mr. Honeyman, with the same distinctive features, corbie-step gables, and a mass of square tower in the rear; it is shown in a rather powerful and effective water-colour drawing, with a strong light thrown on the red-brick of the principal features for Glen Lodge (30), by Mr. Young, sketched with a free and easy touch, are worth notice as suggestions in picturesque architecture on a small scale. It is curious to notice what a large amount of what may be termed picturesque design finds place on the walls of the exhibition,—designs of a class illustrating what would suit the painter in point of varied and irregular outline, rather than the repose, and symmetry, and balance of outline and expression which belong to the best and purest forms of architectural design, properly so called.

Blossfield's "Whitgift Hospital Middle-Class School," at Croydon (31), is like a church, a sound Gothic design well drawn, and with a rather commonplace type of tower, differing in no material respect, in design and expression, from what we should usually suppose to be a church tower; but such a diversity of expression ought surely to exist in buildings for such different objects. Next to this hangs the "Gaiety Restaurant, Strand" (32), by Mr. Phipps, who has probably been hampered by having to assimilate his building to the style of the well-known front of the theatre adjoining; considering this, he has been fairly successful, but the treatment is heavy and unrefined. Mr. J. P. Reddon's "Almahouse, Felham" (52), is a clever drawing with a disagreeable tone of colour, showing an original, though rather quaint, Gothic design, with figures illustrative of the object of the building in low bas-relief sunk in panels. The panel in the gable end is somewhat awkward in outline, and fits very ill into the irregular space left in the gable, on one side of which is half cut off by the line of the adjoining wall. The "Grammar School at Kingstons-on-Thames" (54), by Mr. Stallwood, is what we should call a "Medieval life and society." It is a drawing in red brick (very red in the drawing) and stone dressings, and is a "Proposed National Hospital for Incurables, Oxford" (61), by Mr. Buckridge, of which we have a view of part of the quadrangle, seems to be a combination of church and cottage architecture,—a holet, or aisle, with elaborate tracery windows below, and very plain line dormers and square sash-windows above. Mr. Edis shows details (78) of the warehouse front design which is exhibited in the Academy (802), which do not alter our good opinion of the design; but why does he indulge in the absurdity of placing Medieval costume and elevation figures dressed in the Gothic arches and windows? It is not this sort of thing ought surely to see that they are militating against their own cause; for what possible excuse can there be for it except as an expression of feeling that the buildings represented in the drawing are unsuited in style to any but Medieval life and society? Clever architects like Mr. Edis should be above this sort of non-sense. Mr. Goodchild's perspective of "Design submitted in Competition for Queen Elizabeth's

Grammar School, Kingstons-on-Thames" (85), is a remarkably nice etching, showing a building in a quiet style of domestic Gothic of the fourteenth century character; the bell-turret is not very happy in outline. The "Lincolnshire County Prison," hung next to it (86), by Mr. Peck, at all events does not pretend to be, perhaps, the chief architectural merit that such a building can very well exhibit. Mr. Dawson's "Orphan Asylum, Watford" (91), is a bird's-eye view of a large group of buildings arranged around three quadrangles, of the merit of which we difficulty to judge from a drawing of this kind, especially without a plan to give us a key to the motive of the whole. Mr. Peck's "Suffolk County College" (95) is a pleasing design in brick, Tudor Gothic, with some touch of modernism in it. A quiet and picturesque design, too, is Mr. Howell's "Berkshire Lunatic Asylum," which we illustrated some little time since. The "Great Northern Station Hotel, Leeds" (173), recently completed by Messrs. Hadfield & Son, shows a rather powerful and picturesque treatment of this class of building, with its two large square masses above the first floor line, and the deep recesses above the entrance; this is certainly something out of the common place in general treatment, so that we more regret the unsatisfactory character of some of the details; the trick (for it is nothing else) of placing pointed labels over round window arches, and the pally character of the balcony railings, which ought to have been cast in the hands of artists constantly make them, really ornamental features. In "Premises to be erected for Messrs. Brandon" (177), by Messrs. Giles & Biven, we are introduced to a few acres of planters, redeemed by a praiseworthy effort to give a little stability to the ground story by heavy masonry pilasters and columns, and the sheets of plate glass. Mr. Chaffield Clarke's "Design for a City Building" (174) is a very ordinary Roman design, with coupled engaged granite columns on the ground floor, and pilasters on the floor over the window mallons, which certainly look hopelessly clumsy on the face and with deep reveal, and a projecting bracket at the top, partake far too much of the character proper to a cost-iron standard, a mistake which we have frequently noticed in recent designs for stone buildings. "Design for a Public House, Ballynagall, Ireland," by Mr. Altoncham, is, at all events, a different treatment of gate-piers, a feature for which there is something to be done by architects to redeem it from the commonplace; the present design, classical, but with novel treatment of panneling and detail, is so very solid, that the pier would certainly look hopelessly clumsy in perspective, unless, indeed, they have been a little cooked for the elevation. The "New Premises for the East India Railway Company," by Mr. Knightley (182), is a very sensible, plain, street design; Italian, with a good deal of novelty of treatment in detail: the window architraves on the second floor are a little awkward in outline, but the treatment of the first floor windows, with the line of the architrave cut out at top and base into an ornamental outline, and crowned by just sufficient decoration in the small cornice above, is very good, and in a style well suited to this climate and atmosphere. Mr. Robins's design for the "Wilts and Dorset Bank, Salisbury" (193), is a good and pleasing classical design in itself, but wants the strength and accentuation of the lower story, which are necessary to give the appropriate expression to a bank; the comparatively light columns and circular-headed windows of the second story, however, rather detract from the effect. Next to this, Mr. Marrable's "Church of St. Peter, Deptford" (196), is worth looking at, as an admirably drawn and coloured interior view of a brick church, with square-solited, notched arches springing from polished granite columns, with very happy contrast of tone and colour. "Overstone Hall" (200), by Mr. Tenlon, is a dignified design for a large mansion, with what may be called a mixture of Renaissance and Elizabethan features prettily successfully fused into a consistent whole; a massive tower forms the leading object in the composition. "Frogmore, near Henley," (201), is, on the same hand, and in a different style, a late Tudor design in brick; but Mr. Tenlon, however he may vary the style of his domestic buildings, always impresses on them a certain amount of originality of treatment, and is quite in a different position from those architects who merely reproduce a certain sort of non-sense, or the original features of two or three styles totally unconnected with each other by age or country.

Having mentioned the best of the designs actually executed or to be executed, we may go back to the top of the room, and look at one or two of the ideal designs which have been premiated by the Academy and the Royal Institute. The "Design for a Railway Station," for which the Soane Medalion was awarded, is represented by a perspective view (No. 800) in the Academy, which did not strike us as calling for any remark. It had the aspect of a railway-station, certainly, but with an unpleasant general outline. The details shown here (111) of the part of the waiting-room elevators are in the Gothic plate tracery manner much in vogue. Bas-reliefs, for which the floor level show smiths carrying on forging operations, &c., which is appropriate enough; the bas-reliefs above these windows show allegorical figures placed uneasily on the hanches of the arches, with ornamental trees growing out of the window-labels, &c., a clumsy method of placing bas-reliefs, though clever men adopt it. Mr. Florence's "Design for Theatre" (106) Royal Academy medal, 1859, is a fine Classical design of Roman type, suitable enough in expression. We should have thanked Mr. Florence more for it if he had suggested any means of doing away with or of treating architecturally the immense expanse of sloping roof which generally forms the crown to a theatre, and which, when seen from a little distance, deforms the whole of a design; and it also had suggested anything more new in the way of decoration. Why festoons of flowers and naked boys are always to be considered *propria quæ theatri* we know not, unless the latter feature is a hint of the nudities that are now to be seen within. Mr. Lonsdale's "Ball and Concert Rooms" (107, 114, not premiated), though not looking very festive, even with the addition of the four arbors in flower-pots over the entrance, show a good deal of originality, especially in the manner in which it is contrived that the upper stages of the two towers should shut up, like a telescope, into the lower portion, as they evidently will do. Bas-reliefs on the towers represent Terpsichore and suite, and Orpheus playing to the lions and other savage beasts. Our experience is, that those of any sort are bad listeners at a concert, and prefer to hear of their own voices. This design is wrong something, though, because it shows that the author thinks for himself. He should reconsider his towers, and remodel the upper stage, which is quite different in character from the rest, and more like timber construction than masonry.

A decorative design we have "Decoration of Yeasthills 14, Fitzroy-street," designed and executed by Mr. H. S. Marks. The arts of design (apparently) are represented by three figures in the centre, while "Music" and "Poetry" stand a little apart on either hand; the work is in the usual flat style which Mr. Marks employs so well for wall decoration, and of a very subdued scale of colour, perhaps a little too subdued, but much depends on the actual situation, light, &c. Mr. G. E. Cooke (144) are, many of them, very pleasing, representing single figures, groups of birds and flowers, &c., lined in black, with warm buff tint on the figures against a white ground. They are not suitable for floor tiles, but would be an agreeable novelty in wall decoration, if discreetly introduced at suitable points. It is a mistake to attempt to combine, as he does in one or two of them, the kind of design which we call the perfectly flat, Mr. Chancellor's "Designs for Chimney-pieces, at Whitton Lodge, Northamptonshire" (149, 150), are most praiseworthy and successful efforts to concentrate a little more art than is generally found around the domestic fireside. The dining and drawing room chimney-pieces are shown in sepia line drawings, with a very sensible opening with square panels round it, filled with foliated carved ornament; the latter semicircular, and with semicircular panels round the opening, after the manner of "cupping" on a large scale. The character of the two designs, in relation to their respective positions, is very well discriminated. The bedchamber and nursery chimney-pieces are shown in sepia line drawings, with the same appropriate diversity of character, the nursery chimney-piece is decorated with blue and white tiles, representing little stories, calculated to attract the infant mind, and with the motto over it, "Who never tries cannot win the prize." We wish some of our large chimney-piece manufacturers would try to get a few such designs as these from those who can produce them, instead of the unending and distasteful things which are ranged by hundreds in their show-rooms to

tempt the purse of the British Philistine. Mr. Gribble's "Design for Bookcase, and Decoration for Library" (119), is a very good drawing, in the current Gothic manner of furniture design, but with more refinement of detail than we find in many such works. Unfortunately the wall decoration shows in the frieze the worst style of absurd conventional Medieval figures, whereby so many architects and decorators endeavour to persuade us that we are living in a barbarous and uncivilized age when people could neither invent nor draw anything but monstrosities. It is a great pity, again, that any one who can use the pencil with so much facility and spirit as Mr. May Smith should waste his ability over such worthless nonsense as the sketch of the "Signs of the Zodiac" (131) for "Wall Decoration," forthwith! What man in his right mind would go to the expense of having such a grotesque absurdity stereotyped on his wall? His "Unfinished Sketch" for wall decoration (148), with a gold background, is more serious in intention, and looks melancholy enough for the subject it is designed to illustrate. Mr. J. D. Croce contributes some capably-executed sketches in colour of wall and ceiling decorations at Cairo and Damascus; one of these, on the "exterior wall of the Jama Mallah, Damascus," is a very good specimen of Arabic geometric design inlaid in coloured marbles. Mr. F. Leighton's "Decoration of Hall in Mansion at Kensington" is very happy in tone and colour, as might be expected, but seems to have been designed in a hurry; the arabesque work in the upper portion is not very good in detail. Mr. Marks sends some "Book Cover" designs, which we submit are too Egyptian in type, though clever and suggestive. Mr. Anson's "Study for Decoration of the British and Foreign Bible Society's Premises" (169) is somewhat better, with its coloured motifs, but we could not see a good design for stair-railing. It does not clearly appear from the catalogue whether Messrs. Green & King's "Decorations of Teatro Massimo, Palermo," is an executed work or not; but there is a good deal of merit in the design, which, however, follows the prevalent taste for what is over-fond and showy in theatrical decoration; the best bit of it is certainly the decoration of the front of the upper tier of seats, intentionally kept rather plainer and quieter than the lower tiers, and in much better taste and more architectural in character. We have noticed the same thing often in theatre decoration, which as at present practised is generally best exactly where the decorator has intended to keep his work rather subdued. Will no one ever venture to decorate a theatre, externally and internally, on really refined artistic principles, instead of on the principle of making the most gaudy possible show for the money? It must be admitted, certainly, that such decoration would accord but ill with the style of theatrical entertainment most popular at present.

The two screens in the principal room are also good. No. 1 by the Architectural Association, Sketch-book, and No. 2 by various designs by members of the class of design in connection with the Architectural Association. We have not space to go into these in detail, but many of the drawings on both screens are well worth attention. The Sketch-book drawings show notably great clearness and firmness of line, one or two by Mr. Vialle we may particularly notice, as excellent in this respect. On the other hand, the same screen are some very fine and successful photographs of old and new buildings, including several of Bayonne and Moulins Cathedrales. Among the drawings [of the class of design on Screen 2, we may mention with praise a "Design for a London Shop-front," by Mr. Watts, and two designs of the same class by Mr. W. L. Spiers, the latter very sensible and thoroughly practical designs, which we hope the author may one day be able to carry out; there is a wide enough field for improvements in shop-fronts! A "Boat-house," by Mr. Aston Webb shows clever treatment of a rather out-of-the-way subject. In the smaller room is a large collection of sketches from buildings in various parts of the world, among which we may mention some excellent ones by Mr. Emerson, especially "Ruins in Fort Agra" (286), and "Gateway and Capitals at Bejapour" (294). Mr. Spiers sends two or three sketches in his now well-known style, and Mr. F. Anson's series of "Sketches taken at Athens in 1846" (266-276), including an admirable sketch of the monument of Lycabates, cannot fail to interest the visitor, and ought to have seen the light earlier than the present year.

We have gone at some length into the contents of the Architectural Exhibition, being anxious not only to encourage what we regard as sound art, and to discourage its opposite, but also to convey to readers who have not visited the Gallery in Conduit-street an idea of the variety of designs, many of them exceedingly suggestive, some of very high merit indeed, which are collected there, and to stimulate them to aid in supporting and making known this medium for the collection and exhibition of drawings representing current architectural progress in this country. There is, we have reason to know, a feeling on the part of some of the leading members of the profession in London as to the architectural drawings had better be concentrated in the room which the Royal Academy have consented for the present to devote to architecture, in order that they may be placed where the public cannot but see them, or at least go through the room in which they are placed. This latter, however, as we hinted in our review of the Academy drawings, is really what the public mostly do; they walk through the room; they do not come to the Academy to look at architecture, but to look at pictures; and, moreover, the Academy have not room in the one gallery they appropriate to architecture for as many drawings as can be hung in the Conduit-street rooms. The drawback is that the public do not come to this latter room; to which we reply that better funds, arising from a larger subscription-list, would render the proper advertising of the Exhibition in non-professional quarters an easier matter than it is at present. We do not say that the present exhibition is altogether satisfactory to us. We see too much of mere archaeology, too little evidence of thought and purpose in designing, too many drawings which merely represent what we have seen over and over again. But these are defects, and as how useful it is, or ought to be, to the members of the profession, independently of the general public, to have means of seeing and comparing *en masse* a number of tolerably representative drawings, of noticing the direction in which we are going, of correcting faults of habit and fashion by comparison with the few designs which stand above these influences. It rests with the profession to say whether the opportunity is to cease after the present year, or whether they will combine, as they easily may do, to furnish the means for its further continuance.

ARCHITECTS AND THE GOVERNMENT.

On the 13th instant a deputation from the Institute of Architects attended the Prime Minister in Downing-street, touching the dismissal of Mr. Barry from the House of Parliament, the importance of properly qualified supervision of all important public buildings, and the ownership of architects' drawings. The deputation included Sir William Tite, M.P., Mr. Beresford Hope, M.P.; Sir M. D. Wyatt, Professor Kerr, Professor Russell, Mr. W. White, Mr. A. W. Blomfield, M.A., Mr. D. Braden, F.S.A.; Mr. F. P. Cookerell, Mr. H. Curry, Mr. R. W. Edis, F.S.A.; Mr. C. Godwin, F.S.A.; Mr. O. Haussard, Mr. C. F. Hayward, F.S.A.; Mr. E. Anson, Mr. E. Roberts, F.S.A.; Mr. J. P. St. Aubyn, Mr. G. Tressitt, Mr. Sancton Wood, Mr. H. H. Hakewill, Mr. J. Peacock, Mr. R. L. Thompson, M. T. B. Smith, Mr. A. Kitchin, Mr. J. Warren, Mr. J. P. Seddon, Hon. Secretary; and Mr. C. L. Eastlake, Assistant-Secretary.

The deputation was received by Mr. Gladstone, with whom were also the Chancellor of the Exchequer and the First Commissioner of Works. Sir W. Tite introduced the deputation and the subject. Sir Digby Wyatt, in place of his brother, the president, who was unable to attend, stated forcibly some of the views of the Institute, and Mr. Beresford Hope, Mr. Godwin, and Mr. Seddon followed. We have not notes of what was said, and can only recall the observation of one of the speakers.

He said he had been requested as an old Fellow of the Institute to add some words to what had been already urged—first as to the ownership of drawings, and, next, as to the custom, the drawings belonged to the architect. As the conductor of a professional journal, he had corresponded during more than twenty years with persons in all parts of the kingdom on this subject, and he could say that in no one case of which he was aware had the claim, when made on the part of the employer, been maintained. He did not know that any case had been taken to a court of law; representation of the existence of the custom, and the common

sense on which it was founded, had prevailed to bring about a settlement. The custom suffered everywhere. He believed that it was essential to that effect, not societies in England, Ireland, and Scotland, nor to speak of America, had been already handed to the Minister. Should the question go to law, he thought the courts would hesitate before coming to any decision in opposition to a custom so long and generally acted on, even should they happen to be of another opinion. It had been asserted in a public journal that the Institute of Architects had wrongly interfered in expressing their opinion that it was necessary for the worthy maintenance of national monuments and buildings that they should be under the superintendence of specially educated men, and that the Institute. He could not agree in this objection. The Institute, a chartered body, were disinterested in no speaking, the matter affected so few, and he knew no other association from whom the public might more fairly look for an expression of opinion and guidance on the subject. Reference had been made to various public buildings, each placed under the superintendence of an architect, such as St. Paul's, the Bank, and others. He would add to the list by naming nearly all our cathedrals. These important structures had suffered for years by being left to the care of a mason or a clerk of works; but the opinion of deans and chapters had become educated on the point, and now he believed there was not one cathedral that was not under the supervision of an architect. The profession were strongly affected by the contrast that had been pointed towards Mr. Edward Barry, and the important questions that were raised by it, and he ventured to urge that it called for reconsideration on the part of the Government.

Mr. Ayrton replied at some length, and Mr. Gladstone also spoke; but their views, as expressed later in the day in the House of Commons when speaking of Mr. Barry's motion, have since been so widely published that it is unnecessary now to report them. The striking point in Mr. Ayrton's reply was the assertion that much of what had been said by the deputation was founded on misconception, as Mr. Barry had not been dismissed. Mr. Gladstone, in the course of the debate, said the same thing. What Mr. Temple did was to call attention "to the correspondence relating to the dismissal of Mr. Edward Barry from his employment as architect of the Houses of Parliament; and to move that, in the opinion of this House, the abrupt discontinuance of the employment of the architect who has hitherto been engaged whenever professional skill and responsibility were required, at a moment when works entrusted to his direction were still in progress, is unequalled for and of a shameful expediency."

Mr. Gladstone, as referred to, said:—
"The words of the motion evidently implied that the completion of works in progress under his charge was to be taken out of his hands; but that was a statement which was entirely without foundation. Mr. Barry was to complete the works which were in progress exactly as he would have done if this correspondence had not taken place; and as to the future, the Chancellor of the Exchequer had given it as his opinion, that Mr. Barry ought to be employed when works were required in progress, not that he was determined to be discontinued with regard to architectural works which might hereafter be declared necessary."

We will say nothing of the terms of the correspondence on which the opinion out of doors was founded. On these statements being made in the House it would have been as well if the motion had been withdrawn. However, it was pressed to a division, and being twisted into a sort of "want of confidence" motion, was, of course, lost, 169 voting for it, and 152 against, a small difference under the circumstances, especially as several members quite opposed to the proceedings of the First Alderman Lawrence, Sir James Lawrence, and others, refrained from voting, considering it not desirable to press the Minister too hard.

The claim to ownership of drawings still remains open, and to this we shall doubtless have to return.

A House for Societies.—A proposition is on foot to build some place of accommodation for various learned societies which meet in London. Last week a meeting was held of representatives of seventeen societies, which pay in the aggregate no less than 1,700*l.* a year for rent of premises, and the probability was expressed of building a hall, at a cost of about 20,000*l.*

WATER SUPPLY AND OTHER QUESTIONS IN INDIA.

The condition of the water-supply in India has recently undergone a searching examination, and the results obtained are by no means satisfactory. The low-cost (or no-cost) natives of Bengal are not particular in the matter of water, and, up to a very recent period Englishmen have thought for more of conquest than of sanitary regulations; so that the sources of water supply have been very little cared for. Tanks have accumulated vast masses of vegetation, and have abounded with fish and water-lice. Wells, as a rule, have had no protection against surface pollution, and the runnels have been and are that both ways, and will continue to be fearfully polluted, not only with vegetable and mineral matters in excess, but also with animal matter of the most revolting sort, namely, drowned bodies of natives. Any person conversant with Indian history knows that the poor Hindoo is a creature of impulses and despair: death has little terror for the famine-stricken native, and suicide by drowning, even in tanks and wells known to be in use, is fearfully common, and human bodies are committed to the sacred waters of the Ganges in thousands; and yet this water is used by the residents on its banks and even in districts in the Bengal Presidency, during one year, upwards of 1,200 human bodies have been removed from tanks and wells, the water of which tanks and wells is in use as a supply for towns, villages, stations, barracks, hospitals, &c., and for further consumption. These wells, many human bones have been removed, the fish having wasted (dissolved) away. At many of the stations in this presidency Europeans on their first arrival suffer in various ways; so by fever, diarrhoea, and cholera, by boils, and by catarrhs, as the men have arrived, going through the disgusting routine of drinking tainted water and paying the penalty in human sufferings. Recent chemical analyses show that a vast proportion of these diseases is preventable. The presidency of Bengal is a region of heat, moisture, rivers, swamps, jungle, and chagra; and it is in this vast district that this dreaded disease (cholera) obtains its birth; and, in its terrible maturity and strength, passes forth over the inhabited parts of the earth to teach men that they must pay the penalty of a sudden and unexpected death. The simple laws of nature are neglected, or are blindly and stupidly broken. It has long been known that polluted water, during epidemic periods, is a deadly poison; and, if water pollution and cholera are cause and effect, the tainted wells and tanks of Bengal only perfect their natural work. The preparations made by the results are in accord. Tanks and wells are neglected, and, consequently, the water is sent to the uttermost: the population, native and European, blindly and ignorantly drink the waters and suffer accordingly. From the grand ranges of the vast snow-capped Himalayan mountains to the sea, over the regions watered by the sacred Ganges and its numerous tributaries, this neglect prevails. The monsoons bring deluging rains and relief, for as the waters rise cholera disappears, being drowned out of the submerged swamps and vast alluvial plains, but only to reappear on the subsidence of the great flood waters, as the tropical heat evaporates the sudden soil and renders it more fertile. The mortality in such a district, so neglected, has been very great. The questions now are, "Need such mortality continue?" "Must European life be expended at the rate common to periods when the results are passed?" On the nature of the answers to these questions depends the supremacy of British power in India for a short or a longer period. Sanitary science teaches this lesson. Abandon stations situate in swamps and jungles; cleanse and protect all sources of water supply, and establish a sanitary police both for the natives and for the British population; remove every known source of disease which is removable; wash and be clean; but see that the water is free from pollution. The continued government of India by Europeans cannot be. Great Britain may plant her pure religion, but will not govern in perpetuity. She may drain the swamps, and furnish pure water, and construct networks of highways and roads, common and iron; foster native manufactures, and encourage commerce; but in due time her work will have been accomplished and her labour must cease. In the future history of the

world the facts and incidents connected with British power in India must dwell upon will not be of armies, generals, governors, and conquests; of battles, suppressions of mutiny, or of human slaughter in any form. The memory of these may remain, breeding feelings of revenge, or of shame, or of sorrow, in proportion as the hearts of those who read are hardened or have been civilised by Christian teaching. The true and enduring name of Great Britain will be connected with the permanent establishment of water and sanitary regulations of the most simple character; namely, those works which have tended to promote social comfort, and those regulations which have been insured human happiness, and are a means of securing health to the greatest numbers.

THE WORKMAN AND HIS FINE ART.

It is no one thing more certain than another in connexion with the future of the working man, it would seem to be that "improvement" must be begun by himself feeling the need of it; and that the improvement in the working man must be a physical and bodily one, and one that concerns the house he lives in, the furniture in it, and the clothes he wears. Mental improvement, whatever that may mean, comes after these. It is a fact which has not often been noticed, that the progress in the domestic improvement in the human mind, even in its lowest and almost hopeless state which it so often is, unfortunately, that you cannot anywhere, in the very lowest neighbourhoods, such as the poorer districts of Westminster, close to the Abbey, or of Whitechapel, or the more famous St. Giles',—and those are the places wherein the working classes are found to congregate and cluster together most thickly,—you cannot anywhere see a small room, however shabbily furnished, without noticing that the walls of it are thickly hung with pictures of some sort or other; commonly they are very coarse coloured lithographs of it, would seem, no sort of interest whatever, but yet they are pictures of figures representative in some sort of human passions and interests. How any one can endure the constant sight of such worthless things may remain a mystery, but there they always are, and it seems to show that art of a certain character is found to be necessary to every human being, however depressing their circumstances and surroundings may be. It would be a curious question to inquire into, to determine, if it be possible, as to how far is any one to be considered improved, mentally improved, who thus collects and has perpetually before him pictures of a kind, and which to him, or to her, are pictures and works of fine art. Is it the very beginning or the end of human culture, and how far is such a one in advance of those, if there be any, who care for none of these things? It has been sufficient to see that uneducated people anywhere are found to care about art at all; you must, it has been said, educate them first. But here in Westminster we see that people not at all educated do care about art, and pay for it, and carefully hang it up, and carefully help at all things looking at it. The costly pictures round the room of the poor man and those common coloured prints round the room of the poorest, are nearly on a level, as far as the impelling motive is concerned. In this sense they are both educated and both improved; and here we would venture to hint at a means of adding to the educational appliances of the working man, perhaps more effective than many suggested, viz., the production through the autotype process or otherwise of facsimiles of the productions of the great masters of art and painting, of original drawings, etchings, engravings, both old and of to-day. Thus and through these great works of art, man and his wife and children educate themselves without troubling their betters; for surely no one will doubt that there is a small amount of educational force and help in such things as these, the highest efforts of the greatest minds and hands. Through these great works we see them and their thoughts and labours. Thus may the entire apparatus and furniture of the working man's house and home be added to and improved.

Another subject akin to this, and always to be found in the room of the poorest and humblest, are what are called "cheap ornaments." Strange objects enough. When the picture or mental object they can give it would be curious to inquire; they are never of the smallest possible use. Figures in coarse china-ware, very

gorgeously coloured, animals of different sorts, grotesques somehow contrived so as not to be grotesque at all, but only utterly unmeaning and silly; imitation model clocks, a whole warehouse of stupidities, are common and to be seen everywhere, and are eagerly bought and carefully displayed, and, for a long time, there is no getting away from them. Let us be just to these people: it is real love of ornament and fine art that compels on a Saturday night the appropriation of a portion of the week's earnings to objects of this kind, worthless and trumpery as they are. It is certain that our present race of working and labouring men and women are, at least, above the lowest stage of human progress, for they have, as we see, art and ornament, and a love of the beautiful, as far as they can see it; for these things of beauty are found where there is hardly enough of furniture for necessary use, and are carefully arranged and kept free from dust. We have no right to despise these things, for chimney ornaments are common property, the very richest sometimes have no others; indeed, it would seem to be no little of a puzzle to discover what we should ever do without "chimney shelves" where people call "ornaments" go to, or would there be any at all anywhere? Perhaps a hint might be got from the interior of a Tartar tent or "ourt," where the "ornaments," useful things ornamented, are suspended from the walls of it.

What was said above about prints and pictures here applies to "chimney ornaments" may they not be improved so as to help to educate the working man, and his wife, and child? Can new and *bona fide* modern ornaments be designed and executed, or is it necessary to resort to "old examples" and precedent, and reproduce, by aid of plaster and the electric screw, the remains of the fragments of Greek and Roman and Italian art and furniture; and thus to educate the modern artisan by giving him the thoughts and handiwork of the old Greek and Italian workmen of days gone by, and of thoughts whose full meaning is long-ago forgotten. Perhaps some art-benevolence-society may be found to solve this riddle. It is worth a little trouble, for the poor man's wife on a Saturday night will surely and certainly buy a "work of art," even from the very hand of Phidias himself, if it be cheap and it happens to strike her fancy. And she must educate both her own and her husband, and their sons and daughters in art, and in the perception of the true and beautiful. The great strength and certainty of success in all this lying in the assured fact that works of ornamental art, if cheap, will be bought and looked at by the homeliest cottager, if they be provided for sale. Anything will and must be an improvement on the present market stock, no matter where from or what it is.

It may not here be out of place to inform or remind the intelligent reader that there are "warehouses" in the east end of London which regularly import by wholesale cargoes of ornaments of the kind mentioned. They would seem to be manufactured in France and Germany, and are the production, for the most part, of children working, of course, under a regular system of manufacture, the object passing from hand to hand as it goes on to completion. The full nature of this wonderful display of indescribable trumpery can only be appreciated, or even conceived, by being seen, and the very best wish that any charitable person can possibly have, is, that the countries from which they come are either too enlightened or too ignorant to keep any portion of the stock themselves, and for their own use and enjoyment. The warehouses are the south of France and Germany, but the markets England and America. Thus it is that one of the best and highest faculties in man's nature is made by bringing about and keep alive the most worthless of results, and it is melancholy to reflect on the time and mental and bodily strength and skill thus expended and lost.

One other note it may be useful and of some interest to make, as it may catch the notice of some who may care but little for the ignorant fancies of working people. The strangest part, perhaps, of these displays of "ornaments" is the manufactured oil pictures. These are copies of well-known and celebrated works of Dutch and Flemish pictures, of interiors and landscapes. Paris, at least, of these pictures would appear to be handwork, and by the same hand, the precise mode in which they are produced it would be difficult to point out. Where the painters get their thin, waxy colours from must be a manufacturers' mystery; and how it is

that accident does not sometimes do a little towards the production of painting seems equally mysterious; but one artistic feat is certainly accomplished,—anything approaching to real painting is steered clear of in a truly dexterous way, and is a thing to wonder at. But one class of objects there is which society can be said to help; these objects are the work wholly, it is said, of small children. They are figures of animals of different kinds, out of soft wood, and are carved sometimes with very considerable spirit and life, and apparent knowledge of the forms and movements of animals, and even of the hair or wool which covers them. It is said, and probably is, the result, among so many, of pure accident; but it shows to what a level modern European art is reduced, and how out of its fortune will sometimes smile on things. What, if any among these children should have the faculty of catching the forms and strange movements of animal life, as their forefathers did in Gothic gables and tall spires, and the power of perpetuating them in wood and stone; and what sort of thing can that "progress" be which condemns them to their present work, so different from that of their famous "Dark Age" ancestors? These things may be bought at any toy-shop for a penny and twopence each. It is a fact which must perpetually force itself on the attention of the thoughtful observer of modern art, that all things seem to conspire towards the rendering it more and more impossible to employ legitimately and naturally the artistic capacity and energy of the time in which we of the present age live. These are all wasted and thrown away, and seem to come to an end in mere "shop-keeping," and all you can possibly get out of the most diligent inquiry into the matter is that the art-power, nowadays, in Europe, at least, is wasted away, and is sent out only to the wreckage of mere manufacture, and the production by wholesale of such things as we have above referred to. The art-power, without doubt, exists, but we can never see the true and noble results of it!

This subject is just now rendered the more especially interesting from the fact of the proposed introduction of a universal system of education, whereby it is proposed to compel everybody, whether he will or no, to be educated. It will surely then be seen that the art of common things is a matter of importance and interest, and the chimney ornaments are the property of a working man's room, and the pictures hung round the walls of it, may come to be tests of his educational advancement; and perhaps the Government inspector himself may actually find out what sort of education the workman's family of sons and daughters are receiving by a simple inspection of the chimney ornaments and pictures in his possession, and even get in time an idea of art himself.

You, sir, I think, are among the very few who have given an adequate attention to such matters as these. They are not particularly attractive or specially fashionable, but they are certainly as anything can be which concerns the workman and his future, whatever that may be. Surely it is not so contemptible as many may think it; for if among the very worst of these trumpery "ornaments" we take the vilest and the most worthless and the cheapest,—say a small earthenware figure of a man and dog, the man with a dash of red, and the dog with a dash of blue, and compare such with a very expensive modern line engraving of a like subject,—I say it would puzzle the most expert of art analysis or art critics to determine with accuracy which of the two treats is the more artistic, or the artistically worthless. A real and practical change in art and in the practice of it will certainly come about when the time shall come for even the commencement of a new order of things on the "chimney-shelf" and walls of a common room! C. B. A.

ROOFING ZINC.

The use of zinc has rapidly increased in this country within the memory of the present generation. In 1845 the annual consumption was about 5,500 tons, which had increased to 25,000 tons in 1867. Since then the progress has been still more rapid, and the returns of one company alone recently showed the figure of 45,000 tons as the gross of their annual transactions in zinc, used solely for roofing in England and the colonies; and future years will probably show a still greater increase if the same progress be made to secure "good work" be carefully carried out.

We should premise that throughout the Con-

tinued its use has been, and still is, more extensive. In Paris it is the leading material for roofs of every description. We may mention as examples the newer portion of the Tuilleries, all the new markets, nearly all the main-line of the new Boulevards, and the Champs Elysées, dating as they do, back as 1850. Other places throughout Europe may be quoted to any extent, but we think the above quite sufficient to prove that the material has established itself as adapted for works of good character.

The more extended use of zinc for roofs in this country to which we at first alluded, dates from the year 1850, when the Vieille Montagne Company, the largest manufactory of zinc in the world, instituted a special inquiry into the causes of the failure of zinc here, which was conducted by Mr. Jas. Edmondson; and the result was to show clearly that the faults did not arise from the nature of the material itself, but from the use of inferior quality in some instances, and improper workmanship in others. In all cases where the zinc was good, and the work properly done, it has stood the test of time, requiring neither painting nor repairs, and when of proper thickness, it forms one of the most lasting materials that can be employed.

We may here point out the causes of failure which are to be avoided.

The first is the quality of the metal, which, when manufactured from inferior ore, contains certain other metals in admixture with the zinc, which, when exposed to atmospheric influences, set up voltaic action, leading ultimately to the destruction of the metal: this kind of zinc is spotty and uneven in colour, and darker than the proper quality manufactured from the best ore, the calamine.

The second cause of failure is defective workmanship, using the zinc too thin, not allowing sufficient play for expansion and contraction, using iron nails, or allowing the zinc to come in contact with iron or lime; in either case, a destructive chemical action being the result.

As examples of work done in this country, we may notice the distillers of Canterbury Cathedral covered twenty-four years ago, and which have not cost 6l. for repair; the Victoria Station, ten years ago, now in a perfectly satisfactory state; as well as many stations on different railways, and many other buildings in England.

It is concluded, we may notice the peculiar way in which the atmosphere acts upon zinc. Quoting from a report made to the Academy of Sciences by the Director of the Conservatoire des Arts et Métiers:—

"It appears from actual experiment that the oxidation proceeds for about four years, gradually diminishing after the first three months, and that it then hardens into a protecting coat, 'lamelle,' of a dark grey colour, preserving the metal beneath from any further deterioration."

It becomes evident that as a sheet of zinc exposed to the atmosphere for a series of years loses little or nothing of its weight, and that the surface is not marked and polished like enamel, it may fairly be deduced that the following years are not likely to occasion any alteration, and therefore zinc will be placed in the same condition as bronze, which is protected by its 'patine' for ages."

There has been, to some extent, a prejudice against zinc as a lasting material, but with the evidence before us, we may safely say that where it is of a proper description and well laid, this is utterly unfounded. Its lightness and cheapness will doubtless render its use more extensive, if only necessary precautions be taken.

RULES OF PROFESSIONAL PRACTICE.

SINCE a circumstance occurred at the recent special general meeting of the Royal Institute of British Architects, on which the profession generally may reasonably ask for a little further information; and, failing that, request the aid of your columns to assist in ventilating the subject?

At that meeting I took occasion to inform those present how that not long ago the whole question of the usages and rights of the profession had been fully brought before one of our superior courts, and that a decision fully recognising the principles now contended for on the part of the profession was only prevented by the conduct of a member of the Institute, who gave evidence flatly contradictory to the published statements of that body. I also complained, and I think with reason, that the Council, on being appealed to, declined to take any decisive action in the matter, which still remains in an undecided state.

In defence of this inaction of the Council, the secretary stated, what until then was perfectly

new to me, that the member desired having given the evidence, and stated, and that therefore the Council could take no action.

Now, as the complainant in the case, to whom one would suppose this ought to have been at once communicated, allow me to say that during a long correspondence I had both with the secretaries and the late president, I was never once intimated that there was any denial of the facts stated in my complaint, the inaction of the Council having then been defended on totally different grounds; one being that in the opinion of the then Council the code of practice set forth in the Institute paper was only "recommended, and could not be enforced."

This idea, I need hardly say, is directly at variance with numerous previous resolutions and declarations in which the same code of practice is set forth as "authoritative," "binding alike on employers and employed," and "undoubtedly the law on the subject," and if it is to prevail, what chance has Mr. Barry or any other member of maintaining the position now sought to be established, if brought to a legal issue?

I am further strongly inclined to think that the secretary either wholly mistook or forgot the facts, when he stated that the member whose conduct was complained of had denied the accusation. I have accordingly applied to him to verify his statement by reference to the correspondence; but, I suppose with due official reticence, he has not favoured me with any reply. I can only hope he will do so now, for surely nothing is to be gained by mystery and reserve on such subjects.

I should be very sorry to make any complaint against a brother architect that did not admit of clearest proof, and was always ready and willing to appear before the council and substantiate every statement in any proper way that might be required. "The thing was not done in a corner," but was publicly notorious in the Irish metropolis, where it occurred, and was noticed by the council of the Irish Institute in their annual report.

It is absurd to attempt to draw any distinction between my case and Mr. Barry's. There may be differences in detail, but there is none in principle. I brought my action to try whether there were any and what nuances of the profession to be recognised as legally binding; and if Mr. Barry's case were to come to a legal issue, the main question would be the same. While one case remains undecided through conflict of evidence, another case is not likely to come to any better conclusion. Nor need it be supposed that this anomalous state of things is not well enough known to those who may have to deal with the question in the legislature. Three of the counsel engaged in my case are members of the House of Commons, and it is likely that some also members of the present Government. These gentlemen heard the contradictory evidence given, and two of them who were retained by me expressed their utter astonishment that members of such a profession as ours could be found ready to contradict their own published rules. A different state of things prevails, I need hardly say, in the profession they belong to. At all events, so long as it continues on we expect either the Government, the House of Commons, or the public, will pay the slightest regard to our rules or usages whenever they may be called in question? W. FOURGETT.

THE NEWSPAPERS AND ARCHITECTURAL CRITICISM.

SIR,—The ignorance and carelessness about subjects connected with architecture, continually displayed in the pages of English newspapers, have, I suppose, long ago been accepted by those who understand these matters as a necessary and inevitable characteristic of English journalism; but the carelessness of our press in this respect could not be more strikingly illustrated than in the fact that the *Pall Mall Gazette*, a paper which professes to take a lead in æsthetic matters, and to employ on special subjects only writers of competent special knowledge, should have printed such an article as that which was offered as a criticism of "The London University Buildings" in its issue of the 11th. The greater part of the article is cobbled from a

recent description of the building in the *Observer*.

After a long descriptive paragraph reproduced word for word (without acknowledgment), we have such bits of adopted criticism as these:—

Observer. "The porch has five openings, with flights of steps in front, the divisions of openings being groups of columns in a pier, 'rusticated' or channelled, to harmonise with the wings. The four main piers carry seated statues, and the two side piers terminals of peculiar form."

The compiler, not knowing apparently what "rusticated pilasters" are, translates them into "carved columns." But the finest bit is the following: the *Observer* mentions that,—

"The lower division of the wings externally has a Doric frieze containing that of the order of the porch."

Strained through the brain of the *Pall Mall Gazette* writer, the sentence comes out this way:—

"Externally along the wings runs a light Doric frieze, which contains the order of the noble porch in front."

The *Pall Mall Gazette*, however, gives one sentence, and just one, of original criticism on the building, which I commend to the attention of your readers:—

"Taken altogether, the façade has a striking yet graceful appearance."

This, if very not intelligible, is at all events safe, as it may mean anything or nothing. This is the only sentence the germ of which I cannot find in the previously published account.

Now, sir, this is only one out of many specimens of the manner in which literary papers habitually treat architecture. A publication which, when dealing with other branches of art, thinks it worth while to obtain the assistance of contributors who, at all events, give evidence of knowing something of the subject they are writing about (even if their criticism is not always on the soundest principles), is content, when dealing with architecture, to cobble up remarks from another source, with or even understanding their meaning, and to offer its readers an article containing not the faintest apology for anything like intelligent criticism. Editors rely, no doubt, on the ignorance of general readers with regard to architecture; but you will agree with me that those who do understand something of the principles of architecture have a right to expect that works in this branch of art should receive the same degree of attention, and that the same care should be taken to put the criticisms on such works into competent hands, as is exercised with regard to painting and music; and as the advertisers of Warren's blacking "kept a poet," I would advise literary papers to "keep an architect," unless they prefer to continue running the risk of making themselves ridiculous in the eyes of some, at least, of their readers, and to offer "pickings and straws" as original matter.

I enclose my card, and need scarcely add that I have no possible or remotest connexion with the paper which its contemporary has laid under contribution, but write merely and entirely in the interest of ARCHITECTURE.

CHARITABLE DINERS.

THE Literary Fund dinner, on the 11th, presided over by Lord Dufferin, who made a very good address, was lively and agreeable, not the less so, perhaps, because many of the visitors had received invitations to the concert at Buckingham Palace on evening, and so when speaking were led to be short and sharp. Sir Erasmus May, the Bishop of Carlisle, Lord Houghton, the Nawab of Bengal, Mr. Bateman, F.R.S., and Sir Digby Wyatt, were amongst the speakers. An amusing spar between Professor Blackie and Mr. Tom Taylor closed the proceedings. The amount of subscriptions announced was £100.

At the Newspaper Press Fund dinner, on the 14th, Mr. W. H. Smith, M.P., took the chair, and Sir W. Cadogan, Mr. E. J. Reed, Lord Houghton, a member of the Spanish press, Mr. Godwin, Mr. A. Trollope, Mr. Newdegate, M.P., and others spoke, in between much very agreeable singing. About £500. were contributed to the fund.

Something less than this amount was sub-

scribed at the dinner given in aid of the Royal General Theatrical Fund, on the 16th, when H.R.H. the Prince of Wales presided, with his accustomed geniality and earnestness. Mr. Buckstone made his annual address, which included some facts about the last few years, than usual. Mr. Boucicault, Mr. Alfred Wigan, and Dr. Doran also spoke.

At the Printers' Pension and Almshouse festival the Lord Mayor presided. The subscriptions amounted to about £600. Mr. B. C. Hall, who responded to the toast of the "press," commented on the absence of authors and publishers. In truth, however, the number of such diners is so large that even well-wishers get tired out.

THE SEWAGE QUESTION.

Leeds.—The report presented to the Leeds town council, by the streets and sewage committee, on the 11th inst. of average, was soon printed. The committee propose to adopt the A, B, C process now carried out at Leamington by the Native Guano Company, Limited. In order to carry out the system for the whole of the sewage, it is calculated that five acres of land will be amply sufficient, and that this will be enough to cost not more than £20,000. These works can be constructed in six sections. The company intend to begin by expending not more than £6,000. in works, which will purify more than two million gallons daily; and if successful, then to extend the works so as to operate on the whole of the sewage. According to the agreement between the company and the town, the corporation 5 per cent. on their outlay, and 15 per cent. of net profits, after deducting the 5 per cent. already mentioned, and working expenses. The remaining 85 per cent. is to be retained by the company.

Shrewsbury.—The local Board of Shrewsbury has resolved upon adopting the system of drainage employed at Leamington, that is, of deodorising the sewage by what is called the A, B, C system of mixture, which costs 30s. per ton, and gives a manure sold at 3l. 10s. per ton.

ON THE DESIRABILITY OF RESTORING CHURCHES OF THE ITALIAN STYLE OF ARCHITECTURE.

This subject was treated of by the Rev. E. L. Cutts, at a recent meeting of the Institute of Architects.

Mr. Cutts said the taste of the public during this generation, at least of the church-building and restoring public, has run so exclusively in the direction of the Gothic revival, that it has failed to do anything like common justice to Classical architecture in general, and to churches of that style in particular. And yet we have in London and in some of our towns churches in this style which are really noble buildings, many of which are of very respectable architectural merit, and others which, while they are not perhaps such as to satisfy our architects' knowledge and taste, are still important buildings from their size and their use. Those ought to be carefully treated, so as to bring out their architectural merits; *there* as to make them at least as worthy as possible of their important use.

It is quite true that many of those buildings internally look very cold and unarchitectural, but so did our old churchwardenised Gothic town churches before they were restored. Some of these Classical churches will, perhaps, need as thorough and costly a restoration as those Gothic churches did. We shall have to make a clean sweep, perhaps, of lobbies, galleries, and pews. Then we shall find in some cases that we have the shell of a very beautiful temple (as St. Mary Woolnoth and Hanover Chapel); in other cases we shall have a building of spacious proportions, imposing proportions, with some unsatisfactory features for the restorer to deal with. We should have, probably, to put painted glass in the windows, and colour and gilding on the architectural features, and paintings on the walls, and statuary, perhaps, in suitable positions; and so we should give them as buildings the second series which they have always needed. Then we shall have to replace the area so as to fit it for the purposes of a church, and to put into it furniture which will harmonise with the architecture in style, and yet be ecclesiastical in its general effect. Indeed, these are the two principles of restoration which I would venture to lay down: first, that it shall be in true harmony with the architecture of the building, not an

* In a second communication the writer of this letter says this has been satisfactorily explained to him:—"It would appear that the member against whom I preferred the complaint did not represent that the evidence was not to the effect complained of. As, however, the matter was perfectly notorious at the time, I distinctly join issue there."

attempt to Gothicise or Byzantinise Italian buildings; secondly, that it shall be ecclesiastical in its feeling and effect.

The lecturer then took three or four well-known London churches as examples, and sketched out the way in which he would suggest that they should be treated. At the close he said:—

"I should like to see St. Mary Woolnoth taken in hand. The Goldsmiths' Company, I believe, and private people of influence in the City, have already interposed to save it from being included among the City churches condemned to destruction; let them complete their good work by effecting such a remodelling of its beautiful interior as I have suggested,—the cost need not be large, probably 2,000, would effect it; and they would give the metropolitan a more beautiful Classical interior than any which it at present possesses. It would not be well adapted for a large congregation, but no large congregation now uses it; the Sunday congregation is usually fifty; but it would be admirably adapted for one of those short, daily, mid-day services which have lately been established for the use of City men; and its situation in the very fons of the City makes it the church of all others in which such a service should be held.

Happily we have the artists who could execute these restorations thus suggested, even though they include, as in some cases they ought to include, painting of a very high character of art. I have to thank Mr. J. D. Croce for kindly exhibiting on the walls to-night in general illustration of my subject, drawings of ancient Italian church decoration from Siena and elsewhere, and of modern examples of a similar kind from Munich. Sir Digby Wyatt has been so good as to send his designs for the restoration of St. Lawrence, Jewry; and Mr. Burgess his designs for the restoration of the Chapel of Worcester College, Oxford; and here is also a rough sketch of the coloured decoration of St. Peter's, a Norman hill, just executed by Messrs. Harland & Fisher; you may mention also Mr. Butterfield's restoration in progress at Christ Church, Albany-street, and St. John's, in the Waterloo-road.

I do not at all despair of seeing the public led to appreciate these buildings, which they have so long undervalued and neglected, induced to contribute munificently to their proper restoration, and I venture to promise that they would be astonished and delighted with the results.

Of the observations that followed we can only record a few.

Mr. C. F. Hayward said whether the time has now come for these notes or not, or whatever difference of opinion may exist with regard to the style of the proposed improvements, there can be no doubt that Classic churches as they exist are a reproach to us. No one could be found to say, for instance, that the grand old churches in the City referred to by Mr. Cutts are exactly in the condition that they should be, and that no alteration is required to adapt them to present times and altered circumstances. Either they ought to be taken care of, or if not deemed worthy of anything but neglect, should be swept away altogether, as actually cumbering the ground, and doing more harm than good by taking up the services of those who would be better employed elsewhere, and who are now in charge of the mere machinery of worship instead of looking after the spiritual welfare of a congregation. Already there are several of these churches restored in such a way as opens the question which Mr. Cutts has taken up, viz.: how this restoration should be carried out, whether in a Classical or in a Gothic spirit? Notwithstanding the eminent success with which some churches have been restored in a quasi-Gothic manner, I cannot help thinking Mr. Cutts is right when he advocates consistency of style, and that when there is a good Classic building to deal with, the only proper way in which an architect could work upon it would be to treat it as would a Gothic building under similar circumstances, and taking it for what it is in fact, carry out any changes in the spirit of the original style.

Mr. E. P. Anson.—I congratulate the meeting on the advent of a gentleman who stands up and gives us a paper in favour of the Italian churches of London. They represent an epoch in the history of architecture of which, these days, it is well to remind. There is, no doubt, a vast deal to be done in improving the interior of the churches in the City; but we should bear in mind, I think, that the question of church decoration was not revived until after a considerable revulsion in the state of religious sentiment. So

long as Puritan and Low Church views prevailed, churches were not decorated; and up to a recent time, till the High Church party called attention to the subject, the decoration even of Gothic churches was never dreamt of. During the time in which this state of religious feeling prevailed, the residence of the inhabitants within the City was more customary than it is at the present day; but now the congregations in these City churches are exceedingly small, the interest of the parishioners in religious matters being in most instances diverted from that locality to others, and hence many of the City churches are scarcely visited at all. I was myself born and brought up, and have lived amidst these churches.

I know how bare their walls are, and how deserted they now are as places of worship. I think, myself, that all Wren churches are very noble structures, but they are singularly wanting in what we now look for as characteristic of religious places; scarcely any of them have a chancel; indeed, they are little more than square rooms. We now look upon the chancel as a distinctive feature of a church for our system of worship. In that respect they differ distinctly from Gothic churches: in other respects I venture to say they are quite as admirable as places of worship; and the Gothic churches are generally so encumbered with columns that a large portion of the congregation in the pews cannot hear what is going on. That is not the case in Wren's churches. If we look at the examples of St. Vincent de Paul and Notre Dame de Lorette, in Paris, we see how effectively internal decoration can be carried out; in the first-named church, especially, the decoration depends very much upon the magnificent historical paintings which surround the whole church, the work of H. Flandrin and others, and the cost of that style of decoration I think would hardly be subscribed for by the scanty congregations of the City churches.

Mr. Roddon.—I share most interested in the subject, and appreciate Mr. Cutts's motives, and the practical way in which he has brought forward this subject. There are two or three other churches of the kind in London, which have been, to a certain extent, treated as he would propose, viz., one in the Waterloo-road, by Mr. Blomfield, and another in Albany-street, by Mr. Butterfield. The result in each case has been so far successful as to afford great encouragement to carry out Mr. Cutts's views in other cases.

Mr. J. D. Croce, Visitor.—Mr. Cutts advocates that where a church exists, and it is considered right that it should continue to exist, whether in London or elsewhere,—be it of a Gothic or a Classic character,—it should be made worthy of the position which it occupies. It appears to me that there are a large number of these structures of more or less merit, which may be rendered more worthy of the purpose for which they were built and less repellant in appearance than they now are. In considering the arrangement and coloured decoration of such churches, we are, perhaps, under even less difficulty than in treating churches of a Gothic character. The churches existing on the Continent, which have been more or less elaborately ornamented, and whose walls have been treated as fields for pictorial art, are very numerous; and so near as in the city of Paris we have several examples of churches of a Classic character treated ornamentally with great skill and taste. I may particularly mention that of St. Eustache, which, by a judicious translation from Gothic to Classic, which is treated with coloured decoration of a very clever character. The treatment of most of the churches which Mr. Cutts has mentioned is certainly more difficult than of such a church as "St. Eustache," because they are more or less picturesque in composition. The interior of St. Martin's church looks like a large court-room or theatre still, I think, with a skilful treatment, such buildings might be rendered more ecclesiastical than they are. No doubt in the case of a church like St. Stephen's, Walbrook, a very fine effect might be produced by a coloured decoration. The interior of St. Mary, Woolnoth, is dismal in the extreme. It is like a dirty white-washed cellar. You can hardly distinguish the details owing to its gloomy condition; but a certain amount of distinct coloured decoration would render its really fine architecture intelligible. It appears to me that the subject has been left too long in abeyance. The sympathies of the public and of many of us lie more in the direction of Gothic art. At the same time we are not under difficulties in falling back upon

examples for the treatment of such buildings as those to which Mr. Cutts has referred.

Professor Donaldson.—I cannot allow a discussion of this nature to go on without expressing my astonishment to think of the period at which we are arrived. Fifty years ago, if a gentleman had stood up and talked of improving the architecture of Wren by squaring corners here, or cutting off angles there, it would have caused a consternation in the profession. But we have reached an irreligious epoch as to architecture, which Mr. Cutts has, I think, remarkably and fully developed this evening. It consists of colour. The mind of the worshipper is to be gratified, and his devotion excited by blue, green, or red colours on the wall, and gold on the ceiling. My own feeling is that religion is not of that gaudy-painted character, but a sober, solemn impression worthy of the religious places where we worship the Almighty in spirit and in truth. It seems to me, there ought to be reserve and soberness in the human mind, when we approach the awful presence of the Almighty. But if we are to have the eyes distracted and the taste flattered—if, when a man is at his devotions, he is to be met with gold in one place and red in another, is it not calculated to distract the attention? Ornament is not a thing to be put upon architecture, but should arise from the architecture itself. That is a truth which should pervade all design: therefore in the case of our buildings for worship, they require reserve and soberness of treatment, or the religious feeling cannot be solemn. It is suggested that our Italian churches should be treated with decoration in the way proposed to-night. I have been abroad a good deal lately, and what have I seen? I have seen worship carried on at Genoa in places like theatres; solemn they are not: decorated they are. You may go all over Italy, you may go to Venice, and see pictures with gaudy frames, and they attract the worshipper and excite his feelings. In that connection one's ideas of the power of the Almighty, I think, are lost. Mr. Edwin Nash.—My opinion is, that a Classic or other building, if restored or altered, should be treated in the same style, with the same feeling as the original design, and I can imagine nothing more painful than a building like ancient St. Paul's with the classical portico of Inigo Jones attached to it, however beautiful the portico may have been in itself. Such a treatment as that would not occur if a due appreciation were given to art for the art itself, and I consider that architectural appreciation has always been imperfectly cultivated.

Professor Kerr.—We have arrived at several very useful propositions. The first is, that there is a certain amount of Wren's architecture which of sufficient merit to admit of its being "restored." Secondly, we have arrived at the proposition that the restoration is to some reasonable extent to be permitted to be in accord with the original design of the buildings. This will be satisfactory to many of us, I dare not say to all, but to some. For my own part, I think if one or two of the City churches which are condemned to be pulled down were to be previously "restored" without this condition, indeed in the most approved modern Gothic manner, it might be well worth while. It would, at any rate, enable us to see what some of our friends would do for the credit of their creed with *carte blanche* as regards style. Gentlemen appear to forget that there is here something which is not in itself religion, but which at the same time is worth mentioning in connection with religion, and which translation I will not say that England is a Protestant country, the remark would be too severe; but I may say that in the time of Wren it was a Protestant country. Wren had to build Protestant churches, and Protestant churches he built, and built them well. Hence the curtailment of chancels and the regretted absence of baldachins to stand in the midst of the sweeping ceremonial stages which the lectures of Woodcock would have such things for the ordinary forms of Protestant worship; they have no legitimate purpose for the architect to recognise. It is true that fashion changes, and that we must allow for its change; and when one side of the house is in the fashion, the other of course must be out. Some of us have been out of fashion in church building for a long while; but the time is coming when by a turn of the wheel of fortune we shall come in again. I am sure that some of our younger friends at least may expect to live to see the fashion entirely changed. I have only to add that when this time comes it may be difficult for them to know what to do in the way of "restoring" the Gothic churches that are now so fashionable.

MR. EWAN CHRISTIAN, *Architect of East Lavington Manor House.*

THE SANITARY STATE OF BERLIN.

THERE have been many deaths among the inhabitants here, some from fever, some from congestion of the lungs, and other disorders, induced by the want of a sufficient supply of nutritious food, and by ill-ventilated rooms. To the best of our experience and information, the people here pay very little attention to ventilation and cleanliness. They do not keep their rooms and their houses as clean, sweet, and airy as they might, opening the windows at every opportunity, and giving a thorough washing and cleansing after any illness. They walk out of crowded, stuffy rooms into the dank evening air. Berlin is a disagreeable place. It is a city of several palaces separated by broad and dirty streets. These cannot be kept as clean as in some other towns, on account of the filthy open drains on each side of the streets, where every filth is allowed to accumulate. There is always a smell, and where there is a smell there is mischief. The deaths registered in Berlin show an annual death-rate of 34 per 1,000. Diarrhoea caused forty-five out of 469 deaths in the first week in April. However, the poor working-classes put up with great hardships and inconvenciences; through the enormous rise in house-rent they are obliged to live in the cellars and back rooms of the houses, where pestilential smells, disease and poverty, dirt and dampness exist, and apparently there is no attempt made to do away with the cesspools in every house, where everything is allowed to remain for months. We cannot find words disparaging enough against the sanitary state of Berlin; and what surprises us more is the quiet resignation of the people over such a state of bad management. There is some talk about sewerage improvements and a new water company. Somehow the managers of the English Water Company have not gained the affections of the inhabitants in a business way.

Some steps have lately been taken towards building an English chapel at last. What surprises every one is, that there has not been some-

thing of the kind attempted years ago, instead of the present plan of worship allowed by the King of Prussia, who, like the late king, shows every kindness towards the British subjects residing in his capital city. Although there are only about 200 British subjects residing in Berlin, it is to be hoped that with some outward assistance the required funds will be got together.

LONDON STREET ARCHITECTURE.

BUSINESS PREMISES IN THE POULTRY.

To build a new house higher and lower than the old one on the comparatively small site of a London shop, forming fresh vaults front and back, without pulling down the old house in the first place, or stopping the business for a single day, which would have entailed a serious loss, is not an easy matter; but all this we understand was effected in the case of the building which we illustrate in our present number.

Pimm's old-established house in the Poultry and Bucklersbury has been carried on for some time past by Mr. F. Sawyer, of "The London," Fleet-street, who had acquired it by purchasing the business and freehold, and who had also obtained by purchase the leases of the adjoining houses, Nos. 4 and 5, Poultry, and 39, Bucklersbury. These leases he afterwards surrendered on obtaining a lease for eighty years from the Merchant Tailors' Company, for the purpose of extending the business of the restaurant and luncheon-rooms. How to do what was needed without interfering with the business, which was conducted on the ground-floor and basement, with the kitchen on the first-floor, was then the question.

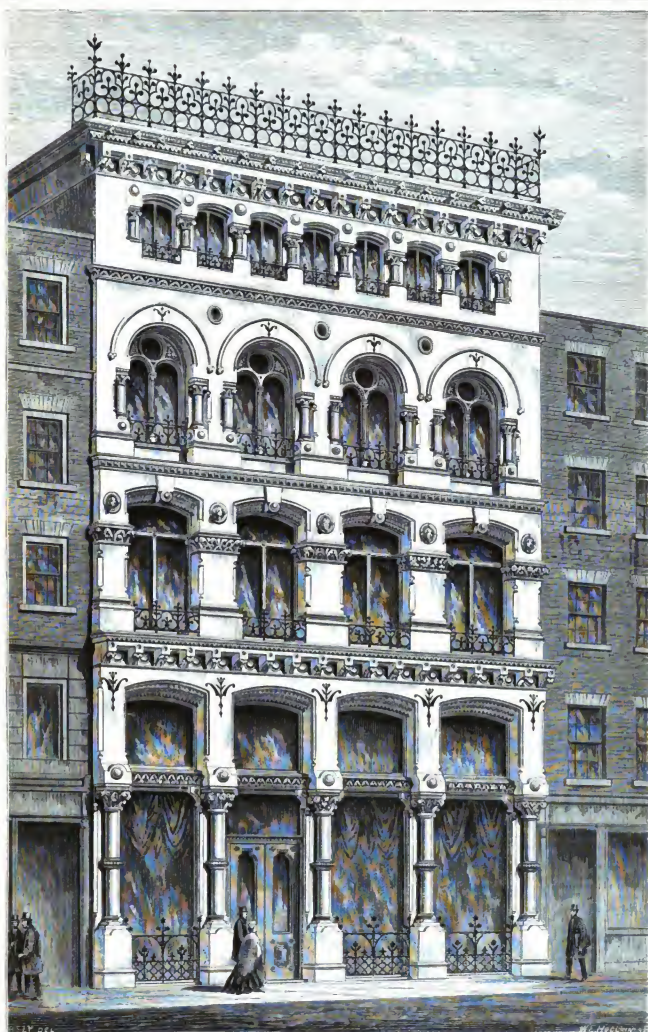
The first difficulty that offered was, how to keep the old floor and party walls up, and build the new, 12-in. rolled iron girders were laid at short intervals to carry the timbers of the roof, which is flat, and covered with 7 lb. lead: the upper part of the party walls was built for their support. The floor below is formed entirely

of wrought-iron arched girders and concrete (Moreland's patent), the whole being overlaid with 9-in. square tiles for the kitchen, with all its various fittings, cooking apparatus, and so on, which are of enormous weight, together with a brick-built oven of not less than 15 tons in weight, together with iron tanks to hold about 2,500 gallons of water, supported on strong wrought-iron girders above the roof, all of which had to be supported before the under portions of the party walls were removed and rebuilt, and so on, floor after floor, with the iron girders; and each story of party walls was successively rebuilt downwards to the completion, without interfering with the business for an hour. This, we need scarcely say, could only be successfully accomplished by the every-day superintendence of the architect, and careful attention on the part of the builders.

When all the interior is completely fitted up, the mezzanine floor above the ground-floor will be provided with luncheon-bar. The first floor is prepared as a chop and luncheon room, and the floor above is being fitted up as a ladies' dining and coffee room, the whole being supplied by a lift from the kitchen above. The proprietor intends, so soon as the whole is completed, and in good working order, to rebuild the older establishment, "Pimm's" proper, to harmonise with the new portion.

The material of front and back is white Suffolk brick; the principal cornices, string-courses, window-heads, carved caps, and carved work generally, are in Connemara stone, similar to that used by the same architect at the Ilup and Malt Exchange, Southwark-street, and which he thinks stands the London atmosphere well. Mansfield stone is used for the columns to the upper windows; and Peterhead granite for the fronts, with Portland stone piers and pedestals, and light grey polished granite for bases in the Poultry front.

Messrs. Merritt & Ashby, of London-wall, were the builders. The architect was Mr. R. H. Moore, of Walbrook.



LONDON STREET ARCHITECTURE: BUSINESS PREMISES IN THE POULTRY.

MR. R. H. MOORE, ARCHTCT.

THE THRUST OF ARCHES.

Sir,—In your notice of the drawings in the architectural Exhibition, you call attention to a octagonal church with iron columns, and for especially to the appearance of the iron rods at the springing of the arches. Being anxious to learn how the thrust of such large chies could be counteracted, when arranged in an octagonal plan, I paid a visit to the church shortly after it was opened, and found at the tie-rods were the only provision made for balancing the external thrust of these arches, unless the lean-to roof of the surrounding "aisle" say be supposed to do something towards resisting the outward pressure.

As it is, of course, important that adequate provision should be made for resisting the horizontal thrust of large arches in buildings, perhaps you will allow me to discuss briefly the principles to be considered in the erection of arches which are not in a straight line on plan. Then two equal arches meet at the angle of an octagon, the directions of their horizontal thrusts will be at an angle of 135° and their resultant bisects this angle. Let P be the horizontal thrust of either arch, R the value of the resultant of the thrusts of the two arches, whose direction bisects the angle of the octagon. Then by the principles of mechanics,

$$\begin{aligned} R : P &:: \sin. 135^\circ : \sin. 112\frac{1}{2}^\circ \\ &:: \sin. 45^\circ : \sin. 67\frac{1}{2}^\circ \\ &:: 101 : 132 \end{aligned}$$

Therefore the outward thrust is—

$$R = P \times \frac{101}{132}$$

Or the outward thrust, tending to push over the column from which the arches spring, is rather more than three-fourths of the horizontal thrust of either of the arches.

The horizontal ties introduced at the springing serve to counteract only a portion of the horizontal thrust; for an arch cannot be considered as a perfectly rigid mass, but its thrust acts at every part, and is greatest at the haunches; the maximum thrust in a semi-circular arch acting at one-third of the distance from the springing to the crown, measured along its circumference. To the example above referred to, it seems to me that the thrust might easily have been counteracted by means of arches thrown across the outer "aisle," from each angle of the octagon to the external wall of the church. This would have done away with any necessity for ties.

R. WYNDHAM TAYLOR.

BELLS AT ST. PAUL'S CATHEDRAL.

As I have previously devoted more time and attention to metropolitan bells in general, and to the great bell at St. Paul's in particular, than any other person, those who have read my notes on the subject in the *Builder* from time to time will doubtless think that I ought to say a word in reply to the significant communication of Mr. Ellacombe which appeared in the number of the 30th of April last.

Your valued correspondent says:—"It [the great bell] is 6 ft. 10 in. in diameter, as lately measured by Mr. Tyssen, and also by Messrs. Warner."

Now, allow me to say that upwards of ten years have passed since Mr. Tyssen measured the bell, and that gentleman tells me that as he used tape for taking the dimensions, the party holding the tape by the ring at the end might have misplaced it, and that my statement,—6 ft. 9 in.,—may be correct. Moreover, Mr. Tyssen never said that the diameter measured 6 ft. 10 in. I should mention, too, that our most experienced bell-founder publicly asserted in 1855, that the diameter is 6 ft. 9 in., and when I examined the bell in 1868 I found he was right.

Speaking of the smaller bell in the north-west tower, made by Philip Whightman in 1700, and now used for the daily service, Mr. Ellacombe ventures to remark:—"This may have been cast from the metal of the bell in the clock tower opposite Westminster Hall-gate . . . called Great Tom."

Your esteemed correspondent must admit, however, that this is a very unfortunate conjecture. Philip Whightman recast "Great Tom" of Westminster, to which a quantity of new metal was added, for the clock in the south-west corner of the cathedral; and not as a service bell for the other tower. But Whightman's Great Clock Bell proving faulty, Richard Phelps made one of new metal in 1709, and having first

delivered the same at the cathedral, he took possession of Whightman's bell. I need scarcely repeat what I said in the *Builder* of April 4th, 1868,—Richard Phelps recast his bell of 1709 in 1716.

As to the weight of the present Great Bell, had Mr. Ellacombe said, "about five tons,"—as I have elsewhere,—instead of 5 tons 4 cwt., he would have been nearer the mark. It is true that in 1867 I gave the latter weight on the same authority as Mr. Ellacombe now gives it, but having since been permitted to consult the "Fabrio Accoutre" in the private library at the cathedral, I am now in a position to state that the weight of the bell is rather under five tons.

Our excellent campanist says:—"The keynote of the bell is A flat, but the sound when heard at the greatest distance is E flat, or a fifth above the keynote."

Now, I do not hesitate to say that this statement, which appeared in a certain periodical many years ago, and has since been copied over and over again into various other works, is erroneous, and very unsatisfactory to competent judges of bells and musical sounds.

In reference to a letter from our respected bell-founders in last week's number, permit me to say that in the *Builder* of March 10th, 1855, Messrs. Chas. & Geo. Moors, speaking of the Great Bell at St. Paul's, wrote thus:—"Diameter, 6 ft. 9 in.; height to the top of crown, 6 ft. 4 in.; thickness at sound-bow, 5 in.; weight, 5 tons 4 cwt." But in your impression of May 11th, 1870, Messrs. Meers & Stainbank write:—"It is 6 ft. 10 in. in diameter at mouth, 4 ft. 7 in. (sic) from lip to shoulder, 5 in. thick at sound-bow, and of the estimated weight of 5 tons."

Here, then, are specimens of some of the erroneous and conflicting statements with which we constantly meet in searching numerous works for materials with a view to compile an accurate account of remarkable bells. It may not be out of place to add that the "part of the original contract for making and fixing the bell" [at the cathedral] which is now in the possession of Messrs. Meers & Stainbank, and which I examined some time ago, has nothing whatever to do with the present great bell. It relates to a former bell cast in 1709.

THOMAS WALESBY.

PALESTINE EXPLORATION FUND.

AN influential meeting, largely attended, was held on Monday last at the Royal Institution, Albemarle-street, to hear Captain Warren report the result of recent explorations in Jerusalem. The Archbishop of York, in the chair, showed the value of the association, and appealed for further aid. Captain Warren seemed to think it rather a joke than otherwise that nothing he had yet done settled anything. We confess to viewing the matter differently, sincerely desiring that the results were more positive than they are. Mr. H. Rawlinson, Mr. S. Morley, the Dean of Westminster, Mr. G. Grove, and Professor Donaldson gave their aid at the meeting. We wish the latter gentleman, who has been on the spot, would candidly tell us whether or not he thinks the explorers are on the right track or not. Unless we have very wrong impressions, the results, so far as the society may take credit, are sadly inconspicuous, with the amount of money spent. This may be simply unfortunate; but it may be otherwise.

THE DISASTER AT RICHMOND, VIRGINIA.

ADVICES from the United States contain long accounts of the terrible disaster which took place at Richmond, Virginia, by the falling of the floor of the Court of Appeals on the 27th ult. The daily papers having announced that the Court of Appeals would make their decision at eleven o'clock in the Ellipsion-Chaboon Mayoralty on the foundation crowd packed the court-room, in the second story of the Capitol, before the hour named. The court-room is just over the Hall of the House of Delegates. Suddenly the packed gallery gave way, and was thrown forward with a heavy concussion into the centre of the court-room. This occurrence, with the rushing and surging of the crowd, caused the whole floor to break through from the walls and sink in a cloud of dust, and laden with its load of human beings, down into the hall of the House of Delegates below. It is fortunate that the catastrophe happened at the early hour of eleven; for if it

had occurred after the House of Delegates had met, scarcely any of the members could have escaped. A large meeting of Delegates which had been held in the hall had just adjourned. The scene which was presented after the fall of the suspended court-room was frightful beyond description. Those who were struck by timbers and caught by the gallery above, and those who were in the lower hall and caught by the falling mass, were the sufferers from the occurrence. It was a cause of thankfulness that so small a proportion of the great number of persons who were in the court-room has been injured. The number of persons killed proved to be sixty, and 125 others were more or less seriously injured.

An experienced architect who has reviewed the plan of the Capitol says the girder which gave way was composed of two pieces of timber bolted together, making when combined an area of 13 in. by 20 in. It was formerly supported by columns, which were removed to improve the appearance of the hall of the House of Delegates. In the centre of the girder was a morise, which reduced the available strength to 9 in. by 20 in. The fatal error was in making the interior changes without examining the girder with reference to its capacity to endure the new stress placed upon it.

GALLERY OF ILLUSTRATION.

MR. and MRS. GERMAN REED added, on Monday last, to their always attractive evening's amusement, a spirited and clever half-hour's performance by Mr. Corney Grain. The production, written by himself, is entitled "The School Feast," and the contributions of several of the invited towards the amusement of the assembled sharers of the feast, afford matter for the display of Mr. Corney Grain's varied talent. One was irresistibly reminded of John Parry in his palmy days. Mr. Corney Grain's perfect command of the piano as an accompanist, his excellent voice, animated and gentlemanly manner, his great powers of imitation, rendered his first appearance in public a success. Whether in the nigger song with chorus, or as the young lady with her French song, or the one singing her rhapsody unappreciated to village ear, or the young short-sighted gentleman whose mistake in the text of his song introduced most ludicrous witticisms, or in the crowning song,—the Scotch ballad, with bagpipe accompaniment by an amateur,—Mr. Grain succeeded in bringing down rapturous plaudits from a crowded audience.

THE ROOF OF THE ROYAL ALBERT HALL.

MANY readers will be glad to know that the supports or wedges under the centres on which this roof has been constructed, were knocked out on Wednesday, the 11th inst., by Col. Scott, the chief director of works, and Mr. J. W. Grover, the constructive engineer, and that the results were very favourable, the deflection being only about 5-16ths in the centre. On examination since, it is found that this has but very slightly increased. In fact, the behaviour of the roof has been excellent, notwithstanding the moderate use of iron, and it is believed that it has now attained its final bearing.

The total height to the apex is about 165 ft., which is some 40 ft. above the top of the monument. The span (major), is 219 ft.; (minor axis), 187 ft.; the great Birmingham roof major span being, we believe, 212 ft., and the St. Pancras, 245 ft., which, however, springs from the ground, and not from the top of a wall, over 100 ft. high. The elliptical form necessarily made the calculations of this roof very troublesome.

THE FAIRFORD WINDOWS.

THOSE of our readers who look interest in the discussion as to the date and authorship of the Fairford windows, will be glad to hear that the managers of the South Kensington Museum have made arrangements for the exhibition of facsimiles, so far as these can be made in any material except glass, of these interesting works. They are to be of coloured tracings, or coloured drawings produced by the aid of tracing, and will give not only the pictorial outline, but the exact tints, the leads, and the entire details of the whole series of windows. Two of the lights have already been received. They are at present hung in the corridor which gives access to the offices.

What with the actual specimens of ancient glass which are in the Museum, the aid of the Art Library, in such works as those of Winston and of Franks, and the collected drawings of which we hope that we now possess only the first, the material elements of instruction in this fascinating art are being richly gathered for the service of the student in the Art Museum.

THE SWANSEA NEW WATER-WORKS.

A QUESTION of serious moment has been brought under the notice of the Swansea Board of Health. A report from the surveyor was read, which stated that there was a leakage in the main pipes of the conduit between the reservoir and Morriston, amounting to upwards of 260,000 gallons of water per diem. The new works were opened with considerable delay in 1863, the contractor having been voted 500l. by the then Corporation as a bonus for completing the works some twelve months before the time specified in his contract. At the opening the works were said to have been finished in the most satisfactory manner, and important effects, both sanitary and pecuniary, were anticipated. Although not yet seven years old, however, the works still cost, so our authority, the *Cambrian*, says, something like 1,000,000l. per annum in repairs alone. The surveyor is said to give even an approximate estimate of the outlay now requisite. The main pipes from the reservoir to Morriston are something like six miles in extent. The leakage cannot, it appears, be localised within narrower limits. The two previously existing water-works have been amalgamated with the newer and more extensive works, and the total cost of the Swansea water supply amounts, in round numbers, to about 160,500l. The total revenue derivable from this vast outlay is said to be but little more (after deducting the cost of repairs and working expenses) than 3,500l. a year. The *Cambrian* asks: Is it possible that the giving 500l. as a bonus for the early completion of the works led to too great haste in the laying of the service-pipes? The works were planned by Mr. Rawlinson, G.E.; were carried out by Mr. William Williams, contractor, under the personal superintendence of Mr. Consens, the town surveyor; and a clerk of the works was employed.

ACCIDENTS.

ONE of the men engaged at the New Gas Works, near Barking, went down a well to measure the depth of water. It appears that the well was used for the purpose of draining the land, and before he had been down long he was suddenly seized by those above to stagger and fall. One of his companions, in spite of his own experience and warning, instantly went to his rescue; but the poor fellow shared the same fate. Underscored by this, a third, fourth, fifth, and sixth went down (!), but only with the same and results,—all falling victims to the foul air contained in the well. After a short time another man, provided with a diving dress, was lowered, and succeeded in bringing them up. A medical man, after four hours' laborious work, succeeded in recovering two of the seven.

Two Men buried alive at Cambridge.—A number of men were engaged in excavating for a sewer for a house about to be erected in the immediate vicinity of Parker's place. They had reached a depth of about 11 ft., when the earth at one side suddenly caved in, literally burying three men. The most strenuous exertions were made by their fellow-workmen for their release, and one, who was in a very upright position, was got out alive, and is now in a fair way of recovery. The other poor fellows, who were in a stooping position, were quite dead when extricated. At the inquest the jury, after a long deliberation, returned a verdict of "Accidental death," and expressed the opinion that due caution had not been exercised by one of the men, named Moore, who had objected to the shoring up.

Fall down a Well 25 ft. deep.—A curious accident, fortunately unattended by serious consequences, has happened at Writtle. It appears that Mr. Henry Tanner, jun., plumber, of Chelmsford, was engaged in repairing the suction-pipe belonging to a pump-well in the kitchen of a house, when a better or plank stretching across the well, upon which he was seated, broke to two, and he was precipitated to the bottom, a depth of no less than 25 ft. Fortunately, the well contained about 7 ft. of water, and this so

effectively checked the fall that Mr. Tanner escaped as nearly as possible unscathed. A first attempt to climb the suction-pipe proved unavailing, for, when half-way up, Mr. Tanner sustained another fall to the bottom, but again without receiving any injury. A second essay to climb the pipe was more successful.

Fall of a Church.—A serious accident has occurred in Bernard-street, Bridgton, Glasgow, whereby five men have been rather severely injured, one, it was feared, fatally. A temporary wooden church was being erected at the east end of the street, in connection with the Independent body. The building, which measured about 50 ft. in length by 20 ft. broad, and 18 ft. to the top of the side walls, had made considerable progress towards completion, the woodwork of the roof having been finished, and the slaters having begun operations, when the sides of the building suddenly gave way, and the roof fell in. The cause of the accident is not known.

OPENING OF THE NEW STANLEY PARK, LIVERPOOL.

ON Saturday afternoon a new public park at the north-east end of Liverpool, and called the Stanley-park, was inaugurated by the mayor and corporation of the town. The park is finely situated, and comprises about 100 acres of land. It has been laid out at a cost of 42,000l., by Mr. Kemp, of Birkenhead. The contract for the whole of the groundwork was let to Mr. Pearson Lee, of West Derby. Mr. E. R. Robson, the Corporation architect, was deputed to design and carry out the various architectural features of the park, and the contract for these was undertaken by Mr. Samuel Campbell. Mr. Peaks obtained the contract for the different fences in and around the park; and Messrs. Morton & Co. got the execution of the fence by the side of the equitride drive in Priory-road. About 6l. acres of the park land, on the opposite side, adjoining Ainslie-road, have been reserved as building sites, and several plots have been already sold, one pair of villas already being seen rising out of the ground. About seven acres have been devoted to an ornamental lake, and the remainder is occupied by a terrace ride, lawns, plantations, walks, &c. Of the total estimate an amount of about 19,000l. has been expended on ground work, drains, planting, &c.; and the rest has been required for cottages and other agricultural works, fountains, &c. A complete set of working sheets and a reserve grant are provided in the neighbourhood of the superintendent's house; and retiring-rooms and other conveniences both for men and women are attached to the foreman's cottage at the top of Mill-lane. Stanley Park is the smallest of the three principal Liverpool parks, the contents of which, in statute acres, are—

STANLEY PARK.	SWANSEA PARK.	SEFTON PARK.
Total Building Area.	Total Building Area.	Total Building Area.
100	6l.	160
about 3l.	about 3l.	about 3l.

THE TRADES MOVEMENT.

Arbitration in Germany.—The committee of the German Chamber of Manufacturers at Leipzig have resolved to form societies of manufacturers in the chief centres of commerce in Germany, for the purpose of furthering the interests of the workmen, keeping the peace between them and their employers, and settling any differences which may arise between them by means of friendly compromise.

Strike of Bricklayers' Labourers at Wolverhampton. A new town-hall, with police barracks, cells, quarter sessions and police courts, and council-chamber, are being built on one site in Wolverhampton at a great cost; but nearly all the work has been stopped by the action of the bricklayers' labourers. These men are now being paid 4d. an hour, or 10d. a week, for they leave at noon on Saturdays. The workmen turned out, however, because their employer, Mr. Horsman, of Wolverhampton, builder, will not give them another 4d. per hour, for which they have given a week's notice. Mr. Horsman claims that any notice of alteration now, in wages, should have been given last week, for he is taking steps to resume operations by means which will render him to a large extent independent of the labourers. There is coming to Wolverhampton from Manchester a steam engine and other apparatus, by which the bricks will be

hoisted by machinery, and the mortar made without labourers' aid. Some labourers whom he has already got from Manchester have left, because they have been threatened with death if they remain in the town!

MONUMENTAL.

THERE is already talk of a national monument to the late Sir James Young Simpson, the discoverer of the anæsthetic or sleep-producing power of chloroform, which he had used most extensively in his own practice, as professor of midwifery; so relieving "the woman" from the predication (not cure) in Genesis, that in sorrow or pain she would bring forth her children. The professor "shut up" certain Calvinistic objections to his practice, on the score that it was dying in the face of a Divine cure, by quoting Scripture in the case of the creation, or bringing forth, of "the woman" herself out of "the man," whom God, to that end, plunged into a deep sleep. What God himself had done, he said, could not be wrong.—A commemorative monument to the late Sir James Young Simpson, memorial of the late Earl of Carlisle at Brampton. The Most, a high hill in close proximity to the town, and forming part of the Naworth Castle estate, has been selected for the site. The pedestal, from designs by Mr. Foley, the sculptor, has already been completed by Messrs. Nelson & Gochley, of Carlisle. It is octagonal, about 8 ft. 3 in. in height, and built of white stone. Originally it was intended to take the stone from one of the quarries in the neighbourhood belonging to the estate, and Tercorner, near Glaisland, was found to be open; but on an examination it was discovered that although the marble in colour and very durable, it was too coarse in the grain to admit of that fine polish and carving which the nature of the work required. R-course had therefore to be had to the well-known quarry of Prudish, in Northumberland. The statue is now in the hands of the bronze founder. It will be 8 ft. 3 in. in height. His lordship, habited in the robes and insignia of the Order of the Garter, is represented in a standing position, the hand resting on a book. The entire cost of the memorial will amount to about 900l.

THE BUILDING ACT.

Sir,—Your correspondent, Mr. Gundry, seems to have lost sight of the fact that the Legislature has endeavoured to frame the existing regulations with respect to window sashes and their frames; and I for one should greatly regret to see any question raised on the subject.

I believe I am right in saying that many of the provisions of the present Act were framed in accordance with the opinions expressed by the late Mr. Bradwood, and were specially directed to the prevention of accidents by fire. What, I would ask, can be more dangerous to property or to life than the use of putty in the joints of window frames burning out, and the sashes falling outwards instead of inwards, and striking the next member of the family from the extreme force of a wind, in a manner in the case of fire to prevent their falling out, and thus becoming a source of danger.

With respect to the question of taste, that I am quite content to leave to other hands, and would merely remark that safety ought to be the first consideration; and the other advantages mentioned by your correspondent of placing the glass as near as possible to the exterior surface, can almost always be obtained practically by glazing and chamfering the window jambs.

EDWARD POWELL.

"AN ARCHITECT'S BILL."

PECK F. C. LINCOLNSHIRE AND NOTTINGHAMSHIRE UNION CHURCHES.

Sir,—An extract from the *Lincoln Journal* appears under the heading of "An Architect's Bill," in which it is said, and it is, as you will presently see, so manifestly unfair to our client, Mr. Peck, that we have no option but to beg unavailingly for the rectification of the facts as they stand. We will not inquire from whence the *Lincoln Journal* derived its inspiration; it is sufficient to bear in mind that the editor of the paper is a gentleman of some popularity with their country brethren. The facts, as briefly as we can put them together, are these: Mr. Peck's plans and estimates for the alterations and improvements were abandoned their scheme in 1868. This was done in March, 1868. Mr. Peck's abandonment, Mr. Peck's instructions to prepare plans and estimates in accordance with instructions given, so as to reduce the accommodation, and he himself, the abandonment, Mr. Peck's account stood as follows:—

Commission on 15,500l., being estimate of expenditure	2050 10 0
Survey and plan of site of church, general plan and topography	214 10 0
Commission on 5,110l. for fresh plans and estimates, and various attendance on meetings at and for Lee Board.	238 0 0
Total	£1,119 9 0

Under the circumstances of abandonment, Mr. Peck expressed his willingness to waive the last item of the capital request of the Lincoln Union Church. He did this, however, in contemplation of a prompt settlement of the balance; this not taking place, he resorted to a reference

to arbitration, and the terms of reference were placed in our hands to settle with the solicitor to the Board, Mr. Tweed, of Litchfield. We naturally insisted on the full amount of claim going before the arbitrators, and this being refused, after a month and ten days' most patient waiting for correspondence, which, as Mr. Tweed's letter should be seen in extenuo, we sent Mr. Tweed a writ for acceptance of service. After several days' further delay, Mr. Tweed returned the writ on the ground of its having been issued, and declining to accept service, which we had to effect on Mr. Clements, the Clerk to the Board, all of which we expressed our regret. We had on the 10th inquired of Mr. Tweed the corporate appellation of his Board, without success; but after the letter was communicated, he suggested that it should have been taken against the managers personally; and, strongly desiring to avoid personal antagonism to those gentlemen, we begged him again and again to accept service for them. After nearly a month's further delay, we heard from Mr. Tweed that he had no instructions; and, on the 10th of February, we wrote to the Chairman of the Board, Sir Guy de Gregory, a long letter, recapitulating the facts; and, in the centre to avoid making expense and needless annoyance, we suggested that he and the Vice-Chairman should instruct a solicitor to appear for them in the name of the Board. This was acted on, and Messrs. Beaumont, of Grantham, gave the required undertaking; Sir Guy de Gregory and the archdeacon, Trollope, were consequently served with copies of writs, as it is most incorrect and unfairly stated; but by their own choice those gentlemen represented the whole Board for the reasons and in the manner we have stated. A good deal of delay followed afterwards caused by Messrs. Beaumont and counsel taking a view to settlement, and the Board was not offered in full discharge of Mr. Peck's claim. We declined this on the strong advice of leading architects we consulted; and at our instance the Board was ordered from the first to the second sittings in Easter Term, in order, if possible, to settle without either side being put to the expense of delivering briefs. Unfortunately, sick and tired of the delays, and, like all professional men, most unwilling to go into court, Mr. Peck, entirely against our advice, insisted on receiving the same in full satisfaction, and this after a delay of over a year after the abandonment of the scheme. MORSEY & CO.
GROVE

ARCHITECTS' ACTIONS.

THE long-pending Chancery suit between Mr. C. J. Richardson and Mr. Whitman, M.P., relative to buildings at Queen's-gate, was, on the 19th of April last, in the Rolls Court, decided in favour of Mr. Richardson. The decree, after a very short discussion. The whole of the buildings are ordered by the Court to be sold. The action first came into Court in the 1860s, 200 letters were produced in court. Sir Richard Baggallay, defendant's counsel, asked if a compromise could be effected, as the case was a very complicated one; but Mr. Richardson assented, naming 2,000*l.* Time was allowed for him to consult and settle with Mr. Whitman. On his refusing any compromise, the case went on to trial afterwards.

NEWTON'S OBSERVATORY.

Rev.—Does the notice at p. 374 refer to the erection lately on the top of the house in Orange-street? And if so, John Thistle (I believe no more authority) corrects in his description of the same in his paper of the 10th of London?

Answered from memory, not having the book handy, but I think he says that "this Observatory, popularly believed to be Newton's Observatory, is not so in fact, having been built by a Friendless, a subsequent tenant of Newton's House." The paragraph in the *Builder* states that the Observatory is to be sold for the low sum of 800*l.* and that a proposal is made to build a new one. I am not present at the nation; also that some Americans are likely to speculate on the purchase.

These American gentlemen who have purchased the erection in question very recently for something less than 100*l.*? If so I must advise the customers of

OUR AMERICAN CORNER.

CHURCH-BUILDING NEWS.

Turnworth.—The church here has been re-opened after restoration. The operations which have now been brought to a termination consist of an entire rebuilding of the church with the exception of the tower. The plan of enlargement may be approximately described as the erection of a nave, chancel, and porch, covering the whole site of the old structure; a north aisle and a chancel aisle being built on new ground taken in from the obsequy; and a vestry screened off at the east end. The tower is the only portion of the original edifice left standing. An examination of the few fragments of work in the old church walls—and chiefly of a window on the north side—which were at all characteristic of a style, determined the architect in his choice of Early English architecture, the type that it would be desirable to follow in the new design. The new church affords sitting accommodation for about 150 persons, including the school children, for whom seats have been fitted up under the tower. The roofs of the nave and aisles are open-timbered, and supported by framed trusses, which, in the nave spring from carved stone corbels in the walls. The chancel roof assumes a polygonal shape, the angels being emphasised by moulded ribs dividing the whole surface into panels. The use of cathedral glass in the windows softens the light in the interior. Mr. W. M. Fawcett, of Weymouth, was the architect under whose superintendence the building was begun and

completed, the original plans having been prepared by the late Mr. John Hicks, of Dorchester. The builder was Mr. Augustine Green, of Blandford. The carving was by Messrs. Boulton & Son, of Cheltenham.

Boyton (East Suffolk).—A greater proof of the extent to which the work of church restoration is now being carried out could not be given than the fact that it has reached the out-of-the-way little parish of Boyton, the church of which has been re-opened, after being almost re-built. The church is dedicated to St. Andrew, and must have been founded at a very early period; but the structure now opened contains no relics of the original building. The chancel has been rebuilt at a comparatively recent date, but in a style that was thoroughly debased. The whole church was mean and unsightly in the extreme. Now it has been almost entirely rebuilt. The tower, which alone has not been rebuilt, belongs to the Decorated style, and the new work is Decorated in character. Externally the walls of the tower have been cleaned, and a new plain stone parapet put up. The new part of the church consists of the nave, with south porch, and north transept, and chancel. The nave is built with white brick, dressed at the roof is tiled. The present building is some 15*ft.* longer and 4*ft.* wider than was the old church. Internally the roofs of nave, chancel, and transept are open and of varnished deal. In the north wall of the nave are two light windows, and the same number in the south wall. In the transept gable wall is a two-light window, whilst the chancel is lighted by a three-light east window and two single-light windows in both the north and south walls. The nave and transept are hemmed with open deal benches, and those of the chancel are of oak. Mr. Wm. Smith, of London, was the architect, and the contract was taken by Mr. W. G. Gamold, of Ipswich, for 990*l.*, exclusive of the restoration of the tower, which came to 118*l.*, and some extra work, which brought up the total to 1,232*l.*, besides the old materials, worth about 80*l.*, so that the total cost of rebuilding the church has been a little over 1,300*l.*

Cransey.—The parish church here has been re-opened for divine service, after a restoration. The old high wainscot around the chancel, by which it was rendered dark and gloomy, has been removed. The choir-seats and the prayer-book oak carved, and the floor is paved with Milton's tiles. The roof, as also that of the whole of the church, has been taken off, but so much of the material (oak) as was sufficiently sound has been replaced, the new work required being of oak of English growth. The outer covering (of copper and lead) of the whole roof has been in good, and unimpaired, condition. A layer of dry hair roofing-felt. The whole work has been carried out from the design and under the superintendence of Messrs. Slater & Carpenter, of London; and under the eye of Mr. Lucas, as clerk of the works. The cost was 1,000*l.*; the carving having been done by Mr. Gregson, of Northampton; the carpenter's and joiner's work by Mr. W. Heslop, of Finedon; and the ironwork by Messrs. Mobbs & Co., of Northampton. The cost of the work is 2,000*l.*

Aspen, near Kettering.—The church here has been re-opened after a restoration under the superintendence of Mr. W. M. Fawcett, of Cambridge, architect. The builder was Mr. Day, of Bedford; the plumber, Mr. Downing, of Finedon. The high pews have been replaced by oak seats. The west arch, which was blocked up, has been thrown open. There are new roofs to the chancel and nave, and in part also to the side aisles. The walls have been freshly plastered, and the pillars and arches have been scraped, and, where necessary, retouched. A new heating apparatus, by Mr. Gidney, of East Durham, has been added, the cost of the restoration has been about 2,000*l.*

Long Newton.—The parish church here has been reconsecrated. The edifice has been enlarged, chiefly at the cost of the Right Hon. T. H. S. Botherham Esquire and the rector. Our space will not admit of a full account of all the alterations, additions, and details, but we may mention one or two things done. The chancel, where the principal enlargement has taken place, is embellished with two stained glass windows. The east one was erected by "The Family," in fulfilment of a wish expressed by the late rector, the Rev. Edmund Estcourt, before his death, the building of the English North one, in memory of the same reverend

gentleman, was given by his own children; it is by Messrs. Hardman. The seats in the chancel occupied by the choir are carved out of cedar grown on the estate. The pulpit is of carved oak and rosewood. The west window is a subscription one, in memory of the late Mr. Edward Estcourt. The work has been carried out under the direction of Mr. W. Wyatt, the architect, by Mr. Brown, of Tethbury.

Speldhurst.—The chief stone of the alterations of the parish church here has been laid. The alterations will be in the body of the edifice, the old tower (which will have a new top put on, if funds are forthcoming) being left standing. The body of the church will be of the Early English style of architecture, from designs made by Mr. J. O. Scott, with a nave and one broad aisle, and it is supposed it will accommodate 400 persons. The cost is estimated at 3,600*l.* Mr. Constable, of Penshurst, is the builder, and Mr. John Wheeler is the clerk of the works.

Cerne Abbas (Dorset).—The church here has undergone considerable alteration and repair, and has been re-opened for divine service. The architect employed was Mr. Wyatt, the diocesan architect; and Mr. Northover and Mr. Dyles were the builders. The stone for the work, and the carvings required in the restoration were provided by Mr. Chapman, of Hamhill. The pews have been remodelled. The panelling of woodwork has been removed from before the west window, and the lofty panelled arch thrown open. The nave and aisles are approached by jutting doorways, which, when closed, form an apartment for the ringers of the five bells with which the tower is furnished. Another feature of the restoration is the removal of the dead wall which formerly extended from the roof-screen to the ceiling, hiding the east window; in its place a stone screen, carved and stained glass. The rubble masonry which filled the space above the roof-screen has been removed, and a moulded channel arch, 16*ft.* in the span, has been inserted. A serious obstacle existed in the way of constructing this arch, as the roof-screen, over which it has been built, divides the chancel from the nave, and, not as is usually the case, at the pillars supporting the arches of the roof. Two of the panels had, therefore, to be cut away on either side, and abutments built on which to raise the chancel arch. Over the roof-screen is a battlemented cornice.

White Colne.—The church at White Colne, which has during the past ten months undergone extensive alterations and repairs, has been re-opened for divine service. The architect employed was Mr. Charles Moore, of London; and the builder and contractor, Mr. J. Rogers, of Earls Colne. In course of the restoration ancient remains have been discovered, including some early paintings which were hidden under a thick coating of plaster. The old roof was found perfectly good, but the walls have been replaced. A painted window, the subject being Christ blessing little children, has been put in at the west end of the church at the expense of the vicar. A great change has been made in the interior of the building. The old coating of plaster and the top of the old tower being in a very bad condition, it was found necessary to rebuild the belfry window and string-course, and a shingle spire of 10*ft.* in height has been added. The old porch has been replaced with an entirely new one composed of stone and flint. For want of funds the chancel has not been completed. In the nave of the church, we may state that in lieu of the pews open benches have been substituted, and that 220 persons may be accommodated. The cost of the restoration as at present completed is nigh 700*l.*, and a further sum of 200*l.* is yet required.

Waltham St. Lawrence.—The new concrete church of All Saints here has been consecrated. The site, which comprises 1 road 2 porches, was given by Lord Baysbrook. Mr. J. Sharp, and Mr. W. Lawrence, were the architect, and Mr. R. Lawrence, of the same village, was the builder. The entire cost of the church, which is intended to be a chapel of ease to the parish church, is 980*l.* The church is built in the First Pointed style, and consists of nave, chancel, aisle, north porch, and south porch, and open wooden porch at south entrance, with a bell-turret at the west end. The walls on the exterior are of red brick, slightly relieved by black bands, and in the interior of concrete block in imitation of stone. The mullions, spandrels, hood-moulds, string-course, and corbels are all of red brick, and were supplied by the builder at his own kiln from the drawings of the architect. In the apex, with its coloured win-

America's Greatest Engineering Work.—The proposed suspension-bridge over the Hudson river, near New York, will extend across the river from Fort Clinton, on the west side, to Anthony's Nose on the east, with one clear span of 1,600 ft., and an elevation of 155 ft. above high-water mark. The total length of the bridge, including approaches, will be about 2,500 ft. The entire structure will be composed of steel combination truss and cable work, of great strength and graceful appearance. There will be four systems of twenty cables deeply rooted in the rock and abutments of the towers on either side of the river. Each cable will be composed of 34 in. diameter, interleaved and covered by innumerable smaller cables, and will contain altogether 371,165,750 ft., or 70,303 miles of steel wire. The estimated weight of the iron and steel in the bridge will be about 17,000 tons, and the total suspended weight 9,651 tons. For the towers and approaches, 59,084 square yards of solid masonry will be required. It is believed that the bridge, when completed, will be able to sustain the aggregate weight of sixty covered bridges, or more than six times the weight that can ever be crowded upon it at one time. The estimated cost of the work has not yet been announced.

Opening of the New Street at Whitechapel.—This new street was formally opened to the public on Saturday in last week by the chairman and representatives of the Metropolitan Board of Works, under whose guidance and responsibility the work has been carried out. The street, which is only 400 yards in length, but has been constructed at a total estimated cost of £43,000, including the cost of compensations and purchases of property, connects Whitechapel High-street with Commercial-road, in line with the latter, affording on the one hand clear access to the City, and on the other hand a direct and continuous line of thoroughfare to the East India Docks. It asperdes the narrow and tortuous channel of Church-lane. At Whitechapel, as at Islington, the engineers of the Metropolitan Board of Works (Mr. Bazalgette) has had to clear the way for the new thoroughfare by cutting through blocks of old houses. The carriage-way is paved with granite, laid upon concrete; and beneath it, along the centre of the street, there is an arched subway of brickwork for the accommodation of the gas and water pipes. The contractor was Mr. J. G. B. Marshall, of Whitechapel.

The Proposed Abattoir at Bolton Bridge, Bradford.—At a meeting of the Bradford Abattoir Company, the plans of Messrs. Taylor & Garthwaite, architects, sent in for competition under the motto "Economy," were selected by a large majority, and instructions were given to the architects to prepare the contract drawings as soon as possible. The plan of the building proposed is of a plain and simple character. The basement floor of the building is to be elevated 9 ft. above the ground, to keep at the flood water of the Bradford Beck. The drainage is to be entirely outside of the building, and is to pass through a filter bed previously or being ejected into the beck, in such a manner as to secure the solid sewage for sale as manure, and at the same time to avoid fouling the beck. The whole of the abattoir buildings are to be executed with stone exteriors, coursed and pointed, the interior to be executed in hard, glazed, pressed bricks, walled in as close together as possible. The approximate estimate of the cost of the whole buildings is as follows:—Abattoir, 8,100l.; hanging sheds, 400l.; hotel, 1,150l.; stabling and shed, 150l.; total, 9,700l.

Hampton-place and Park-lane.—In reply to Mr. Denison in the House of Commons, Sir V. Titie believed the Metropolitan Board had not lost a moment in giving effect to the Act referred to. It was intended to cut a road 60 ft. wide, which would lead into Park-place, he present road being 35 ft. only. It was intended to take down Sir Edward Kerison's house and the stables at the back, as well as the other houses, so that the road would be 50 ft. wide throughout, and in some portions 55 ft. They were under great obligations to the Marquis of Conyngham, for though a portion of the road was cut through his garden, no objection had been offered, the noble owner regarding the matter as a public improvement. They were not to interfere with the garden at the end of Hamilton-place until after August, when the trees and shrubs could be removed without injury.

Liberality and Public Spirit.—These are happily now-a-days no rarity. We have to report several recent instances. The Duke of Norfolk, who lately made several liberal donations to Sheffield institutions, has intimated his intention to subscribe 1,000l. towards the cost of a new orphanage and industrial school between Worral and Oughthbridge, which is being erected by the Roman Catholics of this town and district. It will be remembered that last year Mr. Robert Barnes, of Manchester, presented 10,000l. to the Manchester Infirmary to form the purchase-money of Chedde Hall and grounds for the purpose of a Convalescent Home. The same gentleman has just sent to the Metropolitan Superintendent of the home a cheque for 16,000l., which will enable the trustees to erect a new and more suitable building. Mr. and Mrs. Platt, of Dunham Hall, have presented public baths to the people of Stalbridge. The cost of this considerable gift is 6,000l. Mr. A. H. Royle, as elsewhere noticed, has undertaken to defray the whole cost of a new church at Falinge, near Rochester, estimated at no less than 10,000l.

Proposed Breakwater at Hunstanton, Lynn.—There is in course of construction on the shore at this place, adjacent to the newly-opened pier, a specimen break (50 yards) of a very simple, but it is said very effective, breakwater, designed by Mr. Jackson, of St. Leonards-on-the-Sea, and constructed by Messrs. Aickman & Spurr, ironfounders, Lynn. It consists of a kind of cellular wall or thick lattice of cast iron, fixed to piles driven into the sand, and rising two or three feet only. Notwithstanding this apparent insignificance of height, it is stated to be capable of completely breaking the force of the waves, while allowing the free passage of the water, both inside the sand and abridge to accommodate on the land side, as so to form a protection to the shore and to the base of the cliff, which is much needed. Mr. Jackson has also invented an extension of the device, by which it may be formed into a pier and promenade, and furnished with contrivances for bathing in the open sea in perfect safety, and quite out of sight of the shore.

Mechanics' Institute, Margate.—On the movement of the Margate Branch of the Amalgamated Society of Carpenters and Joiners, a Mechanics' Institute will be probably obtained for Margate. At the close of the Friendly Society's conference, a meeting of the members of the proposed "Mechanics' Institute" was held. Mr. M. H. Judge was elected Honorary Secretary, and it was resolved:—"That the Hon. Sec. do call another meeting of the members for the further election of officers, and to devote as to the opening of the Institution; such meeting not to be called within three weeks of this date." The members present generally expressed themselves to the effect that by the commencement of next winter, a very good institution might be opened, if all would assist in their utmost in advocating its claims to support among their friends and neighbours.

The Oxford Architectural Society.—The members of this society had their first excursion for the season on Saturday last, the president of Trinity, who is also president of this society, accompanying the party. The first place visited was the old church of St. Andrew, and its architectural and historical features pointed out by Mr. Bruton. Thence the party proceeded to Oddington Church, where they were met by the incumbent, the Rev. G. Peto, and here again Mr. Bruton pointed out the most interesting features of the edifice. From Oddington, Charlton-on-Otmoor is only about a mile distant, and on visiting this church, Mr. H. Maxwell-Lyte pointed out its chief features.

New Town-hall for Spensymoor, near Darlington.—Resolutions have been adopted for the erection of a Town-hall, adjoining the New Market, at Spensymoor. Mr. B. Ducombe Shatto, of Whitworth Park, has offered 100l., and the difference has been made up in shares of 5l. each. The hall will be 70 ft. in length, and 34 ft. in breadth, and will be fitted up for lectures, concerts, balls, &c. There will also be two entrance, ante-rooms, and requisite conveniences. A provisional committee has been appointed to carry the matter into effect.

Margold Cake.—The letter on this subject, from Mr. Hugh Smith, has led to many inquiries, especially as to the mode of preparing the cake. The writer being applied to, reminds us that it is a patented process.

Something New (?) for the Polytechnic.—At a conversation in Plymouth, Mr. J. N. Hearder, F.R.S., exhibited an electric apparatus of enormous power which he had made for a scientific amateur, and called an electric fulgurator. By means of this machine he could produce sparks 9 ft. 6 in. long, and under certain circumstances even 9 ft. or 10 ft., even 15 ft. to 20 ft. might be attained. The sparks are zigzag, like lightning, and manifest themselves with a loud report. The principle is not new, although the scale is; Mr. Hearder having himself made one forty years ago. Could not localities be obtained by means of the wholesome lightning thus got up in close seasons?

The Naples International Exhibition.—All who are interested in the forthcoming Naples Maritime Exhibition will be glad to hear that the indefatigable author and antiquary, Colonel Giuseppe Nori, has prepared for the use and instruction of visitors an illustrated descriptive work, which will materially assist them, and doubtless bring Col. Nori the credit he deserves. The journal may be obtained at the office of publication in Naples, 109, Strada Morgellina. We may add concerning this exhibition that the Italian Government will depute to England a transport in June next, for the purpose of conveying to Naples, free of all charge, the objects selected for exhibition.

Quashing a Gift of £5,000.—Vice-Chancellor Malins has decided against the legality of the gift by Miss de Lancy, of 5,000l. for the erection of a fever hospital for Chelsea. Miss de Lancy was very advanced in years, and shortly before she died she handed to her physician a cheque for 5,000l. for the purpose stated, which sum he held in trust. The Vice-Chancellor said the gift stood in the same position as if it had been a bequest by will, and the object of the Statute of Mortmain was expressed by the preamble to be to prevent gifts for charitable purposes by dying or languishing persons. Three out of the four interested under the will raised no objection, it is said, to the gift.

The Archaeological Societies.—The Congress of the British Archaeological Association will be held this year in Hereford, the first week of September. Mr. Wren Hoakyns will preside. The Archaeological Institute will hold its meeting at Leicester at the end of July next, under the presidency of the Lord Talbot de Malahide. The chief objects of interest in the town of Leicester will be its Medieval churches, the Norman Hall of its ancient castle, the "Newark" of the castle, numerous Roman pavements, one being in situ, and the noted mass of Roman masonry called the "Jewry Wall."

The Globe Theatre.—Mr. Herman Vein is one of our best actors, and the "Man of Airie" affords him his best part. It is one of those personations that, once seen, remain fixed upon the memory, a thing complete, and of itself. The part requires considerable versatility, humour, and pathos, youthfulness and old age are involved,—but Mr. Vein is equal to all its requirements, and gives every phase with equal effect. The other characters are supported very satisfactorily; and in the burlesque on "Robert Macaire," that follows, Miss Fanny Josephs, the manager, is bright and sparkling, and Mr. J. Clarke frightfully funny.

Supposed Subsidence of Soil at Lynn.—It appears from recent observation that, owing to the Norfolk Estuary Works and other improvements in the marine drainage of this district, the bed of the river is being continually lowered, and the fleets and streams running into it are following suit, so that the whole of the property adjacent to them indicates symptoms of settlement. The heavy "false front" of the Corn Exchange has for some years past been supposed to be settling out under, away from the building; but it is now suggested that the building is rather sliding away from its front towards the river.

The Free Church of England Movement.—The foundation stone of a Gothic structure in connexion with this movement, will be laid in the course of the ensuing month, at Barn's-green, near Horsham, where a gentleman has succeeded to an estate belonging to Sir Percy Shelley, and given a freehold site. The individual referred to at present resides at Pinlaw, where he is intended to erect another similar church. Mr. Pepper's contract (of Bedford), has been accepted.

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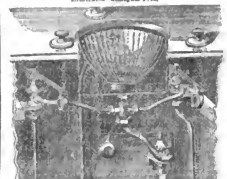
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The dirty water is let out at the bottom of the Basin, and the hot and cold of charged into Basins through the holes round the top washing the dirt of the sides down the waste instantaneously. The objectionable return of dirty water into bottom of Basin is entirely removed.

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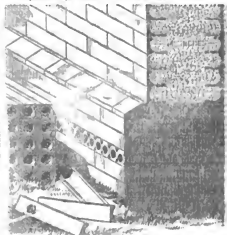
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FIGURE "D" WATER-CLOSET PAN AND TRAP, &c. COMPLETE.

CONCRETE, CAST WITH PATENT BLOCKS, EQUAL IN QUALITY TO THE BEST FACE BRICKS.



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"TAYLOR'S PATENT," Limited.
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Patent Vitrified Damp Proof Course throughout the Foundation.

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Persons have passed over some of these steps the year being only 1-16th of an inch. Steps are in use at most of the Stations on the North London Railway.

TO CONTRACTORS, BUILDERS, and OTHERS—DAY BRICK BUILDING can be improved by use of the concrete blocks forming a part of the above-mentioned steps. (See for terms, apply to Broomhall, Commercial, Chiswick.)

THE PEVOR LODGE ESTATE.—A most important Property, in
limestone, sand and shale, and within the

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MESSRS BLAKE SON & HADDOCK

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upstair buildings are of great height and strength, with four-story wrought-iron, covered with corrugated iron and slate. The property, from its central position and great capabilities, is one of the most valuable manufacturing or trade premises, having the advantage of the chimney shaft. Possession will be given on completion of the purchase.—Particulars may be had of Messrs. DUNN & CO., 10, ABINGDON & FILL, Solicitors, Croydon; and at the Auctioneers' Office, as above.

MESSRS. HARRISON, BROTHERS,
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MESSRS. HARRISON, BROTHERS,
their AUCTION ROOMS, Victoria Hall, E. Austin-street,
Beyruter, on MONDAY, MAY 31, 1870, at ONE o'clock to the
minute.—On view, and catalogue can be had at the Rooms.

MESSRS. SEDGWICK & SON have been
entrusted with instructions from the Trustees under the will
of the late Rev. John Roberts, to SELL by AUCTION, at the
AUCTION MARY, Tokenhouse-yard, Leith, on WEDNESDAY
JUNE 23, at 12 o'clock, the following real estate:—

of superior MEADOW LAND, at Harrow Wood, near Blenheim having a north aspect, with delightful views over the surrounding country, Harrow-on-the-Hill, with the noble aspect, former a prominent feature. About 28 acres being in a ring fence, and surrounded by good roads, present a most charming site for the erection of a country residence or a stylish house, the neighborly being facilities and almost. The church is within easy walking, and the postal arrangements are good; and near to a considerable number of meadow land, commanding about 2 1/2 c.

presenting a most delightful site for a villa residence, being situated from the north and north-west, and having a south aspect. The white of the above property, having very extensive frontage on the high road, offers a good investment to capitalists to purchase for building land, being within three miles of the important town of Harrow, and about a mile from Stanmore. Also a very valuable enclosure of accommodation on edge land, situated about 2 1/2 to 3 1/2 m. n. joining the road leading out to the Kingsbury and London road, was a brick and tiled cottage, with kitchen, parlour, and a small garden. The house and land are for sale.

for, however, and the fact of its being a very desirable place for business, having been selected for that purpose by the present tenant and by nearly two generations of a century. Possession of the land may be obtained by the purchase of the same. — May be cleared. Fortness lies prior to the main, by the terms of the tenancy, of which particular words are contained, may be had; particularly, &c., at the great loss to the neighbourhood; and at the most, of Messrs. RITCHIE & CO. (CARRIERS), 2, Queen's-street, Cambridge, E.C.; and of Messrs. BROWN, WICK & SON, Land and Timber Surveyors, and Estate Agents.

[For remainder of Auctions see page 415.]

by the said CHARLES WYMAN, at the Office of "The Sentinel," No. 1, York-street, in the Parish of St. Paul, Covent-garden, and in the County of Middlesex.—Saturday, May 26, 1877.

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AND STAMPED ORNAMENTAL ZINC WORK,

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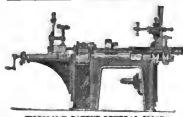
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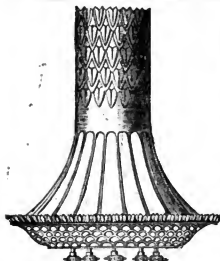
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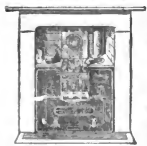


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These Engravings represent the smallest Size Stove, viz. 24 inches long, 24 inches high, and 15 inches deep. The Oven is 12 inches long, 14 inches deep, and 11 inches high. The Boiler contains three pails of water.

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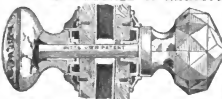
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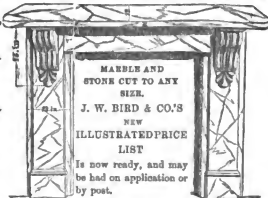
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The Builder.

VOL. XXVIII.—No. 1425.

The Value of the Study of Nature.

HAVEVER may be the exact character of that mysterious bond which connects man with those mute forms of animal life over which he exercises so unchecked a dominion,—whatever that community of intelligent nature in virtue of which he has trained the horse, and domesticated the dog,—no doubt can exist as to the important part which familiarity with the habits of animals bears in human education. Not, indeed, that this educational power is confined to the species of the animal



kingdom alone. The childhood of mankind, whenever that golden age may have dated, was passed face to face with nature. The physical forces that give constant variety to the features of the wildest landscape, impressed their message on the imagination of the new-born race. The sunshine was, to those children who were fathers of men, the smile of Heaven. The storm uttered a voice of warning, of terror, or of protection. To this very hour the poet can only be reared in the cradle of nature.

The double world of life, the animal and vegetable kingdoms, teems with lessons fitted for a more advanced period of education. Industry was first taught by the culture of vegetable produce. To eat bread was the first inducement to human labour; so soon as a northward migration, from regions where the banana and the date-palm offer their untilled harvest to the dusky tribes had taken place, to those where, under more changeable seasons, the olive, the vine, and the cereals are indigenous, and where they wooed the hand of the cultivator. So long, and so harsh, has been the tyranny of what is called civilisation, that the power of appreciating the beauty, as well as the wealth, of nature seems to have been crushed out of the greater number of the humbler tillers of the soil; and we might have been told that this one of the chief characteristics of a delicate and poetic organisation, the passionate love of flowers, was peculiar to an educated, rather than to a natural state of society; were it not for the taste with which, at this very hour, the wild Indian women will deck their hair or their children with the scented, starlike, blossoms that gleam in the Southern forests.

Of the million of little children who are alive at this moment in London, how many thousands have never seen a wood or a lawn? How many not even a flower,—at least, as the glory of a living growing plant? How are the great utterances of nature stifled and smothered by dense walls of brick and mortar, before they can

reach the ears of those birthrightless children of penury? "God Almighty," said one of the wisest of our race, "first planted a garden. And indeed it is the purest of humane pleasures. It is the greatest refreshment to the spirit of man; without which buildings and palaces are but gross handy-works." What sense of beauty, what inspiration of hope, what presence of the softer and nobler emotions of humanity can be expected to spring up within the bosoms of men and women who have been reared, from an unlovely childhood, as exiles and aliens from the face of nature? What gracious influence can smile on a squalid infancy, of which the only dismal playground is bounded by the wall and the gutter, in which the earth they tread is divided into court, and alley, and row, varied only by the sullen gloom of palisaded square or the selfish jostle of busy street? How can children reared in the unchanged goal of a great city, to whose experience land is divided into paths and streets, pavement and mud; sky consists of a few square yards of smoky canopy; and sea or far-stretching area of water are altogether unknown and undreamed of,—how can such children, as they grow up from a neglected youth into a dangerous maturity, fail to exact from society some penalty for the loss of all that makes the glory of childhood?

Nay,—we may be told by those who are quite contented with the world as it is, viewed through their own well-glazed windows,—this is an exaggeration! We are a free country. No one is compelled to live in a city. Men and women may walk from Land's End to John o' Groat's without a passport, and are not now, under almost any circumstances, forbidden to leave their parish. Demand and supply are correlative. This correlation is the grand law of economical policy. Interference with its action is a mistake, as offence against the true source of national wealth, which means national riches. If dense, and courts, and *cult de sac* exist, and teem with a pale-cheeked population, it is because there is a demand for such abodes, and a something or other that calls such a population into existence. It is not the part of wisdom to meddle with such matters. Let them right themselves!

A less enlightened man, one in whom the memory of certain names that rang in the ears of a former generation,—Howard, and Wiberforce, and Jenner, or even the more modern sound of Nightingale,—is not altogether extinct, may here rebuke the more advanced, scientific statesman.

There is a limit, our second reprover will tell us, even to the effect of the laws of the political economist, unquestionably true as they are in the main. We must protect society in the mass, because the mass has no organisation by which to protect itself. We must draw our sanitary cordons; prevent the unsavoury outcome of the lower neighbourhoods from damaging the proprietary value of the bettermost localities. We must even drain, and sweep, and whitewash in the very rookeries, lest they become the nests in which pestilence may be hatched; which, disgusting to say, is no respecter of persons. Let us avoid sentimentality in talking about the poor. Their condition may not be all that we could wish, but who among us has all that he or she wishes? All that society can do is to prevent evil, hatched by poverty, from extending to the detriment of those who, by their own exertions or those of their progenitors, are happily placed above poverty. And this, indeed, it will be added, with a triumphant smile, we do in a most praiseworthy manner!

Now, even as to the very subject of re-oxygenating the air requisite for the consumption of the metropolitan residents, exaggerated appeals to sentiment should be avoided. In more than one of the City churchyards grass grows quite properly upon graves, and even a tree or two may be seen by those who are curious to know what one looks like, and who are

too lazy to walk three or four miles for that purpose. In one of the very narrowest lanes of the City may be found a certain Italian villa, sacred to the worship of Piatas, famous as the site of the very fountain of Pactolus, and adorned by its carefully walled garden. Then we have very lately swept away poor mean houses, by scores and by hundreds. They were, it is true, the railway people who did this; but look at the large area opened on the site of the former shores of the River Fleet! It is positively exhilarating to see so much open space in the midst of a town! The old inhabitants must now inhabit somewhere else, to the great improvement of the air of the City!

Then have we not presented ourselves with a noble river promenade, wrested from the mud-lark? and will not the recovered land supply very eligible gardens for the nobler sort of riverside manions? Have we not the parks for those who care to walk—broad, free expanses, traversed by irreproachable macadamised roads, and containing real trees. Nay, more—borders of shrubs have been planted, and labels attached to each specimen, written, not in Hebrew, in Greek, and in Latin, but, more appropriately, in English and in Latin. And then, over and above all, for those who can reach it, in the pure air of Sydenham, we have a glittering palace, reared among lordly grounds, vocal with the finest music (for the halfpenny people), and available as an unfailing source and fountain of beer.

It may be ignorance, it may be obstinacy. But yet we are unconvinced. We plead for something more for the poor man's child—for something that may be placed within his reach, and that, when reached, shall make him the healthier, and the better, and the happier, for the pure enjoyment which it ministers. "These particulars are for the climate of London; but my meaning is perceived, that you may have *ver perpetuum*, as the place affords."

"And because the Breath of Flowers is far sweeter in the Air (where it comes and goes like the warbling of Music) than in the hand, therfor nothing is more fit for that delight than to know what be the flowers and plants that doe best perfume the Air." For gardens (speaking of those which are indeed princely-like), a fifth part was assigned by the cultured fancy of Bacon to a heath or desert, besides the well-shorn green at the entrance, bordered by a stately hedge. "For the heath, which was the third part of our plot, I wish it to be framed, as much as may be, to a natural wildness."

"Thickets of sweetbrier, and honey-suckle, with some wild vine amongst. And the ground set with violets, strawberries, and primroses. For these are sweet and proper in the shade; and these to be in the heath, here and there, not in any order."

For the delight of the cultivated taste, no less than for the full enjoyment of the beauty of English scenery, a great garden for the people must contain much; indeed should for the main part consist of something yet closer to nature than the studied neglect of an artificial desert, such as is to be seen skirting the lovely rose-gardens of Cashbury. The great glory of England, in a picturesque point of view, lies in her parks— Windsor, Chatsworth, Cashbury, Knole, Tottenham. It is hard to find any European scenery that is at once so wild and so domestic as are these stately chases. A daily walk under the time-honoured oaks, the terraced cedars, the arched avenue of humming lime-trees, in one of these noble retreats, is in itself an element in a liberal education. Let us honour the art of the florist, no less than that of his kinsman the gardener of herbs and of fruit. Let us never omit to draw around any scene of attraction for thousands of visitors broad bands of dazzling flower-beds, bright with every seasonable glory of hue. Broad and stately walks of well-rolled gravel, shaven lawns, affording an

emerald setting for the flowers, winter gardens, rich with the graceful forms of the tropical flora, palms, and tree-ferns, laurels, cypresses, and tufted moss-woods, the lily of the Nile, and the bean of Pythagoras,—let us have all these. Let us add a live dictionary of plants, in a plot of ground arranged in two divisions, serving as index and as catalogue, after the artificial and the natural systems, as far as the genera of the exsiccated plants are concerned. Neither let us exclude lawns and alleys fitted for the exercise of manly or gentle games,—fields of fair flight for the archer, of wide spread for the outlaws at oricket, of close-cropped, cushion-banked grass for the picturesque groups of the croquet party. But let us have, and among, and beyond, all this, must there be a shadow and a setting of forest, or tangle of copse pierced by leafy alleys,—a depth of shade, green, in early spring, with the light shed through the young foliage of the beech, or birch, of a tint like that of the creeks of the Ionian Sea, with an undisturbed wealth of blue-bells.

Nothing is more marked, nothing ought to be more instructive, to those who care for the comfort, the elevation, and the future, of the great masses of the English people, than the avidity with which they turn towards the teaching of nature, wherever it may be had. In the very vices of the nation's character this tendency is present. No taxation or registration is necessary to discourage the Belgian, the French, or the Italian peasant, from burdening his slender resources with the appetite of a bull terrier or other hungry mongrel of any impossible ugliness. The one great relief which the harder worked portion of the educated classes seek from the toil of the bar, the bench, or the senate, lies in a return to the shadow of the original habits of the Britons who gave Ctesar such a rude reception; even if they are driven to the pursuit of grouse on the Scottish moors, now that they no longer browse beneath the oaks of Epping. To drive, to ride, to farm, to breed horses, to run them, to hunt, to shoot,—all the chase relaxations of the English gentleman breathe an inherent love of nature. True, in the latter he may sink,—from bad example, let us hope,—into a butcher. In squab-time he can hardly claim to look down with any real vantage upon the rat-catcher. But even these aberrations of the instinct of the hunter are more manly and more healthful than the occupation of a chair on the boulevard, with the daily accompaniment of the eleven o'clock smoke, black coffee, *fillet de bœuf*, and down with dominoes; or than the flat cake of ice, glass of water, half-chewed cigar, and interminable prate of the Italian deputy or senator.

Not only is a love of nature, however stunted and distorted in its development, an integral part of the English national character, but its presence has been detected in the great growth of the recent movement of the Science and Art Department in the direction of national education. Among the various museums, galleries, and scenes of display which are grouped together at South Kensington, it is observed in the last report, that the specimens, diagrams, and drawings illustrative of the physical condition and natural history of the earth, attract, with the most irresistible force, those whom we should most anxiously strive to attract, since they are those who have the most to learn. Something of the same tendency may be observed by those who visit the British Museum, and the students of something more than the collections. The long corridors and crammed cases, devoted to the store,—we can hardly call it the arrangement,—of the zoological specimens, attract thoughtful and wondering spectators, who manifest a deeper love of the subject that brings them there, than the collection, though admirable for its magnitude, and containing rare specimens of the art of the taxidermist in some of its latest additions, is not so disposed as to convey much knowledge to the previously instructed mind. The cases are too crowded, the classification, though quite intelligible to any one accustomed to the pages of Linnaeus or of Cuvier, is too unsustained. The whole aspect of the museum is that of a place of reference for the student or the professor,—not of an exhibition intended for the public.

We write not without acquaintance with the difficulties that oppose the elucidation of the difficulties which led Cuvier to conclude that the discovery of the true *Systema Naturæ*, the hope and dream of Linnaeus, was altogether unattainable. Nor are we unaware of a later theory, a reaction from the unimaginative positivism of the later years of the great French

naturalist, which ascribes a creative, or, at least, a transformative, power, to the effects of hereditary impulse, or of reproduced experience. But we have no hesitation in affirming that it is possible so to construct, and so to arrange, a Natural History Museum for the people, that a walk through its halls will be a lesson, at once memorable and delightful, as to the grand outlines of that world of life of which man, as a mortal inhabitant of the planet earth, constitutes one among many allied groups.

The broad and primary division of zones of abode marks a primary division of animal forms which is in perfect accordance with the classes of the naturalist. We do not refer to geographical zones, or to that distribution over the surface of the world which is mainly due to the degree of temperature; but to the vertical belts or levels of abode afforded by seas and rivers; by shores, sea-bottoms, bogs, morasses, and fens; by dry land in plain, valley, or mountain; and by arboreal or aerial elevation. In these four great zones of position, the primary classes of the vertebrated animals, fishes, reptiles, beasts, and birds, naturally find their home. A fifth zone is afforded by organic beings themselves, the abode of numerous parasitic species of both vegetable and animal race. Not only do all the living groups known to the naturalist, under the three primary types of animal structure, coincide with one or another of these five zones, but division and subdivision may be carried on step after step on the same principle of arrangement; and the answer to the double question of what a given animal is like, and of what relation it bears to others, either in homology or in analogy,—that is, either in essential structure, or in functional modification,—may be impressed clearly on the mind by an intelligent and persistent reference to this great and simple law of disposition.

A comparatively limited but thoroughly well-selected number of specimens, never allowing, let us say, more than a single representative of a genus (and not admitting the extremes of modern generic subdivision), stuffed with as much care and skill as are lavished in the preparation of the Aye-aye, the Owl, and the Bird of Paradise, which so delight the visitors to the British Museum, arranged in well-constructed, well-lighted cases, without crowding, each specimen accompanied by a clearly descriptive printed label,—the divisions of the whole collection indicated by good divisional labels, in larger and larger type, according to their classificatory value, would prove a most instructive lecture-room, which would probably be the most attractive exhibition that could be offered to the attention of the children of our great metropolis,—the children of every age.

In the attempts which are being made, from time to time, to retain breathing spaces amid the crowded and unwholesome London habitations, to secure, to prepare, or open, parks or gardens, or places of educational resort for the people, we hope that these important requisites will be borne in mind. City life has its own brutalising influences, apart from, or even opposed to, the intellectual sloth of rusticity. We shall best counteract these evil tendencies by restoring the presence of nature. We cannot do this in the grandeur or the power of her wild dominion; but it is within our reach to present to the mind some of the noblest elements of natural beauty, and so to group them as to supply, by a mute but a living and a beautiful illustration, the loss of the boundless variety of Nature herself. Let us place these things, physically and peculiarly, within the reach of the children of the metropolis poor. And, if this fails to attract, to charm, and to educate, let us take thought for thicker walls and more numerous wards for the sick and poor-people that will be required in the days of our children and our children's children.

Blasting on a great Scale.—An extraordinary blasting operation has taken place near Merthyr. A hole, 38 ft. deep, was bored in rock, and it was charged with 600 lb. of powder. The explosion of the charge produced quite a local earthquake, and detached at least six thousand tons of stone.

A NOTE AT CAMBRIDGE: CAIUS' COLLEGE.

AN investigatory stroll about the time-honoured University town, in the interval between the arrival and departure of trains, leads us to notice the new buildings at Caius' College, nearly completed, from the designs of Mr. Waterhouse, as the principal architectural work now in progress there. Though the general appearance and the expression of the building at once engender to us the name of the architect, we find him here employing detail and ornament somewhat different from that with which his name has been mostly connected hitherto. The general object aimed at in this building is at once apparent to the architectural critic: the intention has been to fuse some of the characteristic effects of Gothic and Renaissance design; and in pursuing this aim we must say that Mr. Waterhouse has succeeded in producing an effective and, on the whole, consistent building.

The new buildings occupy one side and two halves of the other two sides of a quadrangle, the two re-entring angles in the interior being carried off in the one case by a circular stair-turret occupying the angle, and showing on its exterior design the raking line of the staircase, and at the other corner by a return of the principal wall face at an angle of 45°, cutting off a small portion of the plan of the quadrangle. Through this angle opens internally the principal entrance to the quadrangle, which externally, however, forms a principal feature in the outer face of the plan giving a projection in the wall-line; a break which above the roof is developed into a kind of low tower, with a pyramidal slated roof and lofty chimney-stacks at each side, and round corbelled-out angle-turrets or finials on the two outer angles. This combination gives the same kind of confusion of style and ordered appearance of composition which we noticed in criticising the new hotel at Liverpool by the same architect some time since; the chimneys and the pointed roof are so closely piled together, and so nearly equal in height, that (viewing it in perspective especially) we scarcely know which to select as the principal feature, and the whole grouping makes a very confused and unsatisfactory finish. The architect would do well to avoid this defect in future, and study unity and simplicity in the sky-line of his loftiest features. The whole of the windows are square-headed, with mullions and transoms with slightly projecting sills, and the doorways mostly with round-arched hoods, no pointed arch appearing in the building so far as we noticed. A machicolated cornice, perhaps scarcely powerful enough to dominate sufficiently into one whole the rather variegated features below it, runs round the building, and over this rises a series of domes of picturesque Elizabethan outline, with a singular kind of flying buttress or stone rail springing in a segment of a circle from the foot of the dormer gable, and joining it again near the apex, on each hand; the feature is not a very architectural one, but it has a pretty effect in the sky-line, the curving round line of the arch and the arch of the external entrance is a kind of mixture of Greek and Gothic detail, which rather happily gives the key to the motive of the whole design; and the carving in the panels under the first-floor windows, while sufficiently deep cut to be effective, is essentially in reference to the style; and at the angles are the square corbelled-out windows, facing at an angle of 45° with the two sides, which Mr. Waterhouse is so fond of employing. The row of square projecting bay windows running through two stories, along the longest external elevation, are not so successful in reference to the style as they are heavy in outline, and the effect is perspective, when looking along the longest front, is not very happy. In the centre of this longest front is a smaller entrance to the quadrangle, through a semicircular doorway of similar character to that of the main entrance; with a pediment, more ornamental iron gates of good design, more Gothic in manner than Classic. The one purely Gothic feature in the building is the row of grotesque spout-heads on the cornice; and these, to say truth, are a feature that might

have been spared without any disadvantage. It should be noticed, also, that the dormer windows rise directly from the upper surface of the cornice without any further sill, and this gives them rather an awkward appearance, especially when near the building, when the lower portion of the window is entirely out of from the eye by the cornice. Over the windows towards the quadrangle are small cornices after the Renaissance manner, but treated with partially Gothicised detail, as the eye discovers on a closer inspection, in the carriage passage to the south. The building is to be decorated externally by portraits statues, the positions for which are already marked by niches and cornices in various places; and one statue of a winged and gowned female clerical benefactor was already in situ at the time of our visit. The walls of Casterton stone, in regular masonry of thin and thick courses alternately; and the dressings, mullions, &c., are of Amster stone, which, in point of tint, does not differ sufficiently from the other to preserve a distinctive appearance for any length of time, if such distinction is an object. Taking the building as a whole, we may be led to say that a little more study given to the style of the ornamental detail, both as to individual portions and as to general composition, might not have been amiss; but in the main the whole work is a very clever and successful effort to supply a necessity of great effect by a combination of materials belonging to different styles, and is, at all events, worth notice and study on this ground, on the part of any of our readers who, in passing through Cambridge, may find time to go far enough into the town to visit *Guise's*, or (as the undergraduate enthusiasts esteem the better name) *Colledge*. Mr. Waterhouse has added also an apical termination to the college chapel, where, as we learned, a new organ has recently been erected.

A stone's throw or two farther on brings us to the east end of the new chapel of John's College, where now the encamped students on the buttresses are gradually becoming filled with the sculpture for which they were intended, such filling having, indeed, been accomplished along the south side of the choir, and apparently proceeding easterly. After looking a little at the chapel, and thinking that it is in a general way too Continental in style and pretensions in appearance to harmonise very well with the sober and homely style of old John's College buildings, and that the tint and tone of the roofing tiles is too near that of the stonework to look well, as they are palpably not the same class of material; and wondering how Mr. Scott came to put such heavy pinnacles and such a very thin and weak-looking balustrade between them as a finish to the tower, the visitor will, if he is of our mind, stroll across the large court of Trinity adjoining, with its tinkling fountain in the centre, and so through into the quiet square with its verdant turf surrounded by one of the most elegant and spacious of Italian loggias, through the further side of which he may see the green gleam of sunlit trees beyond, and whence he may emerge into the college grounds behind, and crossing by the so-called "cycloid" bridge, where

"Chances, reversed air, goes footing slow,"

may wander up and down "that long walk of lime," the favourite haunt of how many a generation of learned and ambitious boys, to find himself in we know not what of day-dream, till "time and the hour" warn him to re-seek the commodious and well-arranged railway station, and return to rapid locomotion and the nineteenth century.

FREE LIBRARIES AND MUSEUMS.

A PARLIAMENTARY paper, just published, will excite surprise and regret at the Free Libraries and Museums Acts of the late Mr. W. Ewart, member for Danfries, should have borne so little fruit during the last twenty years, in which they have been in operation. The paper referred to is a return moved for by Mr. Edward Beane, M.P., last year, intended to show all the boroughs and places in the United Kingdom that have adopted the Act of 18 & 19 Vict., c. 70, and others, for establishing public libraries and museums and schools of science and art. The return is so palpably imperfect in several important particulars, as to induce a mingling that it is not to be relied upon, especially as appreciating which returns are proffered to be given. As touching the incompleteness of the return, for instance, it seems passing strange that a free

library, established under the Acts, which is situated almost at the doors of the Houses of Parliament, has no reference whatever made to it; we refer to the Free Library of St. Margaret's, in St. John's, Westminster. This humane institution is the only one of the kind that the great metropolis has to boast of, or rather to brunt itself concerning; but such as it is it deserves mention; and, in connection with its establishment, honourable mention of Lord Hathley, the present Lord Chancellor, who was mainly instrumental in its establishment. In various parts of London, as well as in many other cities and boroughs throughout the kingdom, attempts to adopt the Acts have been made and defeated by the economists,—save the mark,—with which the penny in the pound is a more important consideration than the moral and intellectual culture, or the improvement in taste, of the industrial population. The penny is tangible and intelligible; the possible results of the establishment of free libraries, museums, and schools of art are not dreamed of in their philosophy. It should be mentioned, before leaving the subject, that the Corporation of London has its very excellent corporation library and museum at the Guildhall, to which access is easily attainable by any respectable person. It includes a reference and lending library and museum, and is especially rich in books, antiquities, and other objects relating to London.

With respect to other places from which returns were asked for, it is to be regretted that from twenty-four towns in Great Britain—twenty-one in England and three in Scotland—no returns of any kind have been received. There is surely culpability in this, especially in relation to the towns in which free libraries under the Acts have been established for years. The list includes Birkenhead, Oxford, Kidderminster, Lichfield, and Yarnmouth, in all of which we believe free libraries exist; most certainly they do, or did, in Birkenhead and Oxford. A list is given of 240 cities and boroughs in England and Wales, concerning which the brief and unsatisfactory record is made, that "returns have been received stating that they have not adopted the Acts in question." The list includes such populous places as Newhampton-Tyne, Hull, Hockdale, Rochester, Oldham, the Hartlepool, Haver, Wakefield, Weymouth, York, Chelmsford, Colchester, Dartmouth, Falmouth, Kilmarnock, Shrewsbury, South Shields, Salford, Stockton-on-Tees, and very many others that might be named.

The return contains some gratifying illustrations of hearty unanimity and of large liberality by which the Acts have been adopted, but illustrations of an opposite and less satisfactory character also. At Birwick-upon-Tweed the Act was adopted in 1867, but in consequence of subsequent opposition by the ratepayers no action has been taken upon it. At Gloucester an attempt to adopt the Acts was made in 1867, but the promoters withdrew the proposal without coming to a vote, in consequence of the hostility of the ratepayers. At Macclesfield the ratepayers have determined by resolution not to adopt the Act. At Margate, in 1867, a library and museum, with the freehold of a scientific institution were offered to the town on very advantageous terms. A very large number of the most respectable burgesses, the largest ratepayers, were out-voted by a majority of the lower class, who outnumbered them on the motion that the Free Libraries and Museums Act be adopted. The triumphantly successful and successful burgesses who would have paid least and benefited most by the adoption of the Act. At Portsmouth two attempts made for the adoption of the Act have been defeated. From Carnarvon the return is that "nothing has been, or is likely to be done, in consequence of public libraries and museums in the borough." At Swansea the Mayor has been defeated by the burgesses in an attempt to put the Libraries Act into operation. In enlightened Edinburgh, a renowned seat of learning and literature, an effort was made in May, 1868, to establish a library under the Public Libraries Act (second), 1867. On a poll being taken, the vote was 1,025 votes against, and sixty-eight in favour of the proposal! Edinburgh has splendid collections of books in its Advocates', Signet, University, and other libraries, which are not available to the artisan class. This discreditable vote almost implies that the burgesses of Edinburgh are not in possession of books is totally incompatible with a disposition to limit the range of their usefulness. Enlarged views were scarcely to be expected among the book-

sters and lodging-house keepers of Margate; but far less should it have been expected that the enlightened citizens of "the modern Athens" should have so far outstripped the humble burgesses of Margate, in the establishment of free libraries and museums, and concerning the splendid success achieved by three noble institutions. The Manchester Free Library was opened in 1852, and, as now developed, consists of a reference library, containing 45,000 volumes; a free reading library, which has upon the total volume to considerably above 90,000; and a free public reading and news room. In the year 1868-69, there were 573,648 volumes issued in all the departments, or an average of 3,058 volumes per day. The sum of 12,824s. was subscribed by voluntary contributions when the library was instituted; about 30,000 ratepayers and workpeople contributed to this amount. The associated libraries are maintained at a cost of about 5,000s. per annum, exclusive of 350s. per annum appropriated to the maintenance of a museum. The produce of the rate in Manchester, at present in the pound, is 5,700s. per annum. The Liverpool Reference and Lending Libraries have 100,000 volumes, and, with the museum, are maintained at an annual average of 4,800s. The penny rate in Liverpool raises 8,660s. The splendid building in which the reference library and museum have their home was the gift, during the lifetime of the late Sir William Brown, M.P. The monthly issue of books at the reference library, are 35,400, and at the two lending libraries, 35,300. The visitors to the museum average 27,800 per month. The Liverpool Library and Museum are maintained under a local Act. The Liverpool Free Library commenced in 1848 with a voluntary subscription of 7,523s. There are 31,614 volumes in the reference and lending libraries. Above 5,000 volumes per month are issued in the reference, and as many in the lending library. The value of the contents of the museum (estimated at above 10,000s.), and the average annual cost of maintenance is 1,668s.

The Birmingham free libraries are of much more recent date, and of more rapid growth than the institutions already referred to. The first department, a lending library, was opened in 1861. The libraries establishment now consists of an art-gallery, a reference library, and five lending libraries, with a free public news-room attached to each. The total number of volumes in all the departments is about 60,000, of which half are in the reference library. The issues of books are about 100,000 per month, and the number of visitors to the Art Gallery, above 17,000 per month. The cost of maintenance of the libraries is 4,250s. per annum, which absorbs the penny in the pound. Bolton (Lancashire) adopted the Act in 1852, when 2,345s. were subscribed by the inhabitants in a lending fund. The reference library has 16,000 volumes, and the lending library 6,000; about 8,000 volumes are issued in the two departments monthly. The annual cost of maintenance is 400s., obtained from a rate of one halfpenny in the pound. The votes polled to adopt the Act were 968 for, and 55 against. The Birmingham Free Library adopted the Act in 1853 by a vote of 420 to 2. It has above 16,000 volumes, and issues about 3,000 per month. A rate of one halfpenny in the pound is levied for the maintenance of the libraries, which realises 350s. per annum. Cambridge adopted the Act in 1854, when 873 polled for, and 78 against, the proposal. There are above 14,000 volumes in the two departments, reference and lending, and there are about 45,000 issues annually, or equal to the issue of each volume above three times. The cost of maintenance is 304s.; the penny would produce about 450s. per annum. The Free Library, opened in September, 1868, has above 12,000 volumes, and issues about 250 volumes daily. The penny rate yields 362s. The Act was adopted at Norwich in 1854 by a vote of 150 to 7. It has about 4,000 volumes, and issues above 2,000 volumes monthly. The annual cost is 1,411s., "by means of a special instalment of loans." Nottingham adopted the Act in 1867, with only one dissentient. Buildings for the reference library and newsroom are in progress. The number of volumes issued is about 15,000 per

month. The Birmingham free libraries are of much more recent date, and of more rapid growth than the institutions already referred to. The first department, a lending library, was opened in 1861. The libraries establishment now consists of an art-gallery, a reference library, and five lending libraries, with a free public news-room attached to each. The total number of volumes in all the departments is about 60,000, of which half are in the reference library. The issues of books are about 100,000 per month, and the number of visitors to the Art Gallery, above 17,000 per month. The cost of maintenance of the libraries is 4,250s. per annum, which absorbs the penny in the pound. Bolton (Lancashire) adopted the Act in 1852, when 2,345s. were subscribed by the inhabitants in a lending fund. The reference library has 16,000 volumes, and the lending library 6,000; about 8,000 volumes are issued in the two departments monthly. The annual cost of maintenance is 400s., obtained from a rate of one halfpenny in the pound. The votes polled to adopt the Act were 968 for, and 55 against. The Birmingham Free Library adopted the Act in 1853 by a vote of 420 to 2. It has above 16,000 volumes, and issues about 3,000 per month. A rate of one halfpenny in the pound is levied for the maintenance of the libraries, which realises 350s. per annum. Cambridge adopted the Act in 1854, when 873 polled for, and 78 against, the proposal. There are above 14,000 volumes in the two departments, reference and lending, and there are about 45,000 issues annually, or equal to the issue of each volume above three times. The cost of maintenance is 304s.; the penny would produce about 450s. per annum. The Free Library, opened in September, 1868, has above 12,000 volumes, and issues about 250 volumes daily. The penny rate yields 362s. The Act was adopted at Norwich in 1854 by a vote of 150 to 7. It has about 4,000 volumes, and issues above 2,000 volumes monthly. The annual cost is 1,411s., "by means of a special instalment of loans." Nottingham adopted the Act in 1867, with only one dissentient. Buildings for the reference library and newsroom are in progress. The number of volumes issued is about 15,000 per

month, and the cost of forming and maintaining the library and natural history museum, 1,000l. per annum, which is taken from the borough rate. Sheffield adopted the Act in 1863, the two departments have about 30,000 volumes. Its loans to readers in the library are about 3,500, and to readers out of the library about 14,000 monthly. The cost of maintenance is about 1,300l. Among other towns that have free libraries and museums in operation under the Acts are:—Canterbury, a museum and library maintained at an annual cost of 190l.; Dover, a museum, at a cost of about 200l.; Hertford, a library, at a cost of 95l.; Ipswich, a museum, and a limited library, at a cost of between 400l. and 500l.; Leicester, a museum, with library in progress, at a cost of 803l.; Maidstone, library and museum, at a cost of 300l.; Stockport, a museum, cost defrayed from rate of 1d. in the pound per annum; Northampton, a museum, with library to be added; borough rate appropriated, 386l.; Walsall, a lending library and reading-room, at a cost of 170l.; Warrington, library and museum, at a cost of 450l., the museum containing upwards of 25,000 specimens of natural history and works of art, nearly all obtained by donation; and Warrick, library, at a cost of 112l. per annum. In Wales, Cardiff has a public free library established by the unanimous vote of the ratepayers. It is maintained at a cost of 600l. a year. In Scotland there are libraries in operation under the Acts at Airdrie, Dundee, and Paisley. At Paisley the necessary buildings for the free library and museum were erected at the expense of Sir Peter Cosse, and transferred to the corporation, free of cost, in trust for the community. The Act has been adopted, and the provisions of the necessary buildings, and the formation of the libraries and museums, are in progress, at Ashton-under-Lyne, Exeter, Leamington, Leeds, Leicester, Stockport, Tynemouth, Warrington (Wills), and Wolverhampton. The subject of adopting the Acts is under the consideration of the corporations of Bath, Bradford (York), and Derby.

Some gratifying illustrations of the liberality of private donors are given in connexion with towns which have no free libraries under the Acts. At King's Lynn, for instance, there is the public library, founded by the Earl of Derby, when he was member for the borough, and which is known as the "Stanley Library." Preston has its free library, founded by Dr. Shepherd, which is now maintained by the corporation. Bristol has a free library, the property of the corporation; and, as regards the borough of Barnstaple, Mr. F. W. Rock, a native of that town, and for many years a respected London publisher, generously subscribes 100l. a year to the Literary and Scientific Institution of the town, which enables the managing committee to admit 100 free members annually, to have the use of the library and museum, and of the classes formed for instruction in language, elementary art, and science. Are there no large-hearted men in Edinburgh ready to follow such a noble example?

FANS AT SOUTH KENSINGTON.

With the view of assisting in the art-teaching of the Department for the Instruction of Women, and especially to direct their attention to the attempts which the Lords of the Committee of Council on Education have made for the improvement of fans, a loan exhibition of fans, has been opened at the South Kensington Museum. Her Majesty the Queen has lent some fans, as have a number of ladies; and Mr. Samuel Redgrave has prepared a special catalogue, prefacing it with the relation of some interesting facts concerning fans and fan-makers. The present exhibition, as we have said, is part of the scheme of the Department of Science and Art for the art instruction of women. To promote this object, the Department offered prizes in competition for fans painted by the students in the female schools of art in 1868, and again in 1869. The fan-mount, to which, in the first of these years, the chief prize was awarded, is included in this exhibition, and it is intended to continue the competition; her Majesty also purposes to offer a fan prize for competition at the International Exhibition of 1871. Those, therefore, who desire to compete may now have the great advantage of seeing all the best fans which can be brought together, and of studying, not servilely copying, what is in every respect most appropriate, tasteful, and novel, as well as what

should be avoided. But the mount, which is the object of competition, is only a portion of the completed fan.

Some interesting facts relating to the Paris museum of fans appear in the Report of the *Département des Objets d'Art*, *Universal Exhibition*, 1867. It is stated that the fan-stick is especially made in the Department de l'Oise, and that mother-of-pearl, ivory, bone, sandal-wood, and other domestic and foreign woods, are used; the manufacture in mother-of-pearl being carried on at Andeville, and in other materials at St. Germain. The work is chiefly domestic, the artisan, his wife, and children taking a share in it, and frequently attaining great skill by their own untutored industry and talent. The finely-painted mount is exclusively Paris work, the most esteemed artists being frequently employed. The fans thus produced are made under the direction of the principal dealers in Paris, and usually represent some specialty which belongs to their producer. In England, the trade has not found such a development, and its future extension would seem to depend upon the up-to-date house of men of taste and capital, to which the present exhibition may conduce.

The dress-fan of a high character is now exclusively made in Paris. In no other city does a modern fan command a price of 100l., and the makers claim to have made all Europe tributary to them, admitting, however, that they cannot rival the cheap and remarkable quality of the Chinese fan.

Mr. Redgrave reminds us of the relation by Nollekens, the sculptor, that when his wife was a girl, her father's intimate friend, Goupy (a well-known water-colour draughtsman, who died in London, 1765), was considered the wisest ornament of the household, and the best painting was then so fashionable that the family of Athenian Stuart placed him as a pupil to Goupy, conceiving that by so doing they had made his fortune; and we learn from other sources that Stuart originally gained his livelihood by painting fans. We should like to meet with one of these. At the present time, the only fans produced in London are, we believe, of the plainest and commonest character, made of paper or of white wood.

The fans exhibited are 413 in number, of which about 150 are French; 150 of the latter, including thirty-four from the Empress of France, having been obtained through the good offices of M. de Sommerer. The Baroness Meyer de Rothschild and some other ladies worked sedulously to obtain contributions, and Lady Wyatt may be specially mentioned as having contributed largely to the collection. Among those from the Empress is one with an elaborate picture (No. 146), "The Adventures of Cupid," including numbers of miniature figures. A French fan (No. 248), sent by Monsieur Voisin, Paris, deserves mention. The subject is the "Symbolical Marriage of Louis XV. and Maria Leszczinska, on Mount Olympus." It consists of a great number of figures, with portraits of the King and Maria surrounded by geni; figures of Jupiter, Juno, and Apollo in carthage, surrounded by musicians and others, in rose carnelians, surmounted with the arms of France and Poland. Sir Philip de Malpas Grey Egerton lent one with an elaborate drawing in pen-and-ink, representing an Academy of the Sciences, with architectural background, by Sebastian Le Clerc. Madame Jubinal has forwarded, with many others, an elegant Italian fan, belonging to the middle of the seventeenth century, painted with the figure of the Sphinx, "an original design" by F. Bonenelli, who was employed by Louis XIV., and painted the frescoes in the Bibliothéque Mazarine. The Empress of the French sends more than one charming modern fan, painted by Madame Calamatta and by Guimel.

No. 211, with Harp and lyre, and a crook, painted by Gavarni, will not escape comment. Another noticeable work is sent by M. Chardin, *Eventailiste*, Paris (No. 324). It is of the time of Louis XV. It is painted with "The Triumph of Mordecai," signed "Germoy," on the back an Italian Classic landscape.

Modern fans we need scarcely say, are involved in the production of a fine fan, besides painting, such as the general form, carving, gilding, and varnishing. Of the works known as *Femina Martin* several good specimens will be found. Martin, who invented the process, and produced so large a number of fans in the reign of Louis XIV. is supposed to have been an Englishman. The fans made under his direction display remarkable finish and brilliancy of colour.

Some of the fans in the collection well illustrate the period at which they were produced; as, for example, No. 102, of the time of the French Revolution, engraved with busts of Mirabeau, used by Marie Antoinette. The Chinese and the Japanese fans are distinguished by the depth and brilliancy of the colours employed. Some of the fans have a story which gives them a separate interest: thus No. 178 is a fan described in one of Madame de Sévigné's letters; 218, a remarkable specimen of imitation lace, was presented by Marie Antoinette to Ponspandou 278 belonged to Queen Charlotte; and 272, a small ivory dress fan, painted with subjects in cartouches, was the property of Queen Marie Antoinette, and was obtained by the Queen of the Belgians for Queen Victoria, who lends it. No. 358 was brought from Italy by Sir Joshua Reynolds for his niece; and 383 formerly belonged to another P.R.A., Sir Benjamin West.

The majority of the English fans exhibited are not very good specimens, although by no means out of place in a typical collection. They may, and should, still be added to. We recollect one (does it belong to Mr. Lewis Pocock?) that was painted with a representation of the tiles at Tanbridge Wells, with Dr. Johnson and other known characters taking the air.

In addition to the prize of 400l. offered by the Queen, as already mentioned, for the best fan exhibited in 1871, being to the value of 10l. for the two best fans; and a sum of 50l. will be awarded and spent in various amounts by the Science and Art Department for fans produced by female students of the schools of art in the United Kingdom. We may hope that some practical results will follow these endeavours to revive the production of fans in England as a branch of fine art applied to industry.*

"LOTHAIR" AND HIGH ART LIFE.

If we were to ask what the foremost idea is which may be said to embody and include the whole number of the aspirations and wishes of the present time, it would certainly be contained in the word *progress*. Everything, we are told from all quarters, is progressing—i.e., going on towards something or other, so one knowing precisely what very few people, as people are found to differ a good deal from one another as to the point to be aimed at. But one thing is quite certain, and that is, that all and the whole of the actual and tangible and visible progress that is being made for the most part concerns but very few people, and the final results of all improvement, finding their way into comparatively few hands. Mr. Durston, in "Lothair," has presented us with a specimen of an example of what progress in its final outcome means and is. Lothair has got everything,—i.e., boundless wealth, leisure, and opportunity, which now a-days means everything. Fine in all its conceivable places is his, for he either buys it, or goes to it, and it is a question of no small interest to find out whether there does now exist, and where, or in what places, any sort of Art, old or new, worth the notice of any man to whom nothing is sacred, and the way of his coming to it. One thing is certain, however, and the only alternative case: must he, perforce, fly to Nature herself, Art not sufficing. It concerns the readers of the *Builder* because the real subject of this book is the modern material and surroundings of those who can get them by simple, paying, means.

Mr. Durston is a very clever book, but a very disappointing one, considering who the author is, from the sheer fact of Lothair being a mere dream, moved about like a shuttlecock from one "influence" to another, without anything in him to direct his own flight or movements: so that the book is, for the most part, mere *agitation*, and art, and furniture influences, not directed, but directing. Every artist should read this brilliant book; for it is about modernism, modern art furniture, and the final results of "progress." Lothair has everything which the

* We may as well mention here that, to provide space in the Museum for the examination and exhibition of the National Competition Drawings of the Schools of Art in the United Kingdom, the Gallery of the Royal Academy will be used, and must be closed for a short time.

modern world of to-day can give, and he can have no more. No man living knows more of the world of "sustained splendour" than the late Prime Minister of England. What a pity it is that he did not in this book make the hero of it say out of it what it is that a very clever man, with boundless means, can get out of it, or make of it. This is not the place to talk about a novel, nor does the book really call for it, because it leaves all the apparatus of wealth dead. It is a book about the most enormously expensive armature, and one cannot help feeling a kind of contempt for it, from the constant thought of the fact that all the sustained splendour in the armature of it is simply the mere dead matter, and about which the life in the book means, and that life does not move it. What a pity it is, therefore, that the illustrious author of his book, with all his opportunities of knowing, and capacity to influence others, did not go to the heart of the matter, and with all his lived experience, and tell us what to do with countless wealth and power, to possess everything; and tell us, too, what there is in his estimation worth possessing, or seeing, and how far it is an improvement, or progress, or beyond that they had who have gone before us, or in advance of those in other countries, as India or China, who have not arrived at our stage of improvement and progress. Might it not, from Mr. Disraeli's hand and experience, have been the book of the day, a sort of revelation of all that is now possible? It is a book about splendid apparatus, and ends in that nothing; but surely here is that in it, or not in it, which may be made to enshrine an artistic purpose, and guide us to something and something more.

Mr. Disraeli's purpose is, then, as far as he is able, the facility to exhibit to us "modern society" in its very best and highest state, the elements in it being totally excluded; in other words, the end and result of our modern progress, and without the means by which it is attained, is here in a measure placed vividly and brilliantly before those who cannot see it all for themselves, and even before some who can; and one of it is that the thought occurs,—is the apparatus of art, splendid as it is, doubt as it is, which the modern man and woman of wealth accumulate around himself or herself, an ivance, artistically or even usefully, on the floor the men and women of old Greece or even possessed three thousand years back, or even antique Egypt five thousand years ago? It is all this splendid art which the author of this book has so wisely and so knowingly and lovingly put in the abstract is simply the so working up raw materials of the world as to approximate them to Nature's own work. The gilded chairs of modern drawing-room such as those in which other reclines, and the ivory chairs in which he conscripts fathers of old Rome sat, and the marble seats in the Greek theatres, are, after all, not so different as the worthy pride such excellent and useful articles of furniture, and he toiled afterwards of a Pompeian lady, and the very-handled brush, with its engraved coronet (a modern lady, are but efforts artistically in the same direction; but surely they are as nothing compared with the living beings who use them. Surely it is better to see a self-sustained human being on a burnt-out far-barrel than a mere dummy and "clothes, dress" in the most splendid of drawing-rooms. It is better by far to be able to kick away the barrel than to lie helplessly in an ivory and gilded chair, with no other to move until lifted out of it by some external force, or to wait till you are advised by some great personage that it is time to take a constitutional walk. Yet of such is this Lothair, he favoured recipient of all that the round world has in its modern and advanced state. There is here not a scientific society, nor an art society, nor a prosperous trader in pearls or splendours, nor an architect producing plans worthy of "purple velvet case," who is not ready rich all he can do to administer to the wants or whims of Lothair. The living question is, can he get anything out of them?

But one of the great defects of "Lothair," and of the least of them, is the total absence of the common herd of humanity in it, and all that contains to them. It is all about the higher orders of men and things, and does not condescend to men or things of low estate. This is a great artistic defect, for gold and diamonds themselves would be utterly worthless if there were nothing in the world but gold and gems; so that not only is Mr. Disraeli's book deficient in a main purpose of exhibiting the full advantage of high life and splendour, but as far as

the human being is interested and moves in it, it fails by not showing, by way of contrast, what its opposite low life is; and from them to show what is the amount of gain to be got, artistically or otherwise, in high or splendid life, and what it is that low life reduces a man to, or puts him entirely out of the pale of. Mr. Disraeli has shown high-art existence only, with its surroundings, and "sustained splendours." What is low-art existence with the absence of those so much coveted splendours? Are they to be made up for in any way? and if so, how, and what it is, which now does it for human nature, whatever it is, must be, in some way or other, satisfied. All must live, the common as well as the splendid, and all will have art surroundings and ways of getting rid of time some how or other. Lothair's mind is filled to the very brim by the mere sight of royalty, followed by the imperial presence of ambassadors, not in the gorgeous costume of the Dark Ages, but decked out in mere common-place and inartistic modern "tailoring," containing certainly nothing of anything like a high-art element in it. Is there anything in lower life, or the life of the lowest, which ever does on any occasion fill its mind and soul to the brim? Well, there is, as there must be, or humanity would die out altogether. Would that Mr. Disraeli had said something about it, if only to show that the world is made of. In the obscure parts of London, not west but east, there are "splendours" of gas, glass, gold, jewels, coloured stuffs, and everything, to wit, "graffiti," theatres, such as they were in Shakespeare's day,—pieces full of sustained splendour, and sound, and of people to fill them; but of which it is evident Mr. Disraeli knows nothing, and which, if he did, he would probably despise and loathe. But alas! for the fallibility of man, even when leading the House of Commons; for it so happens, we speak from actual eyesight and personal and active experience, that all the end of the splendid apparatus of furniture, crystals, and wonders of which he speaks actually does exist in duplicate in the far-off and distant regions of which we speak. It is a most wonderful fact, that if you enter a modern West-end drawing-room, and look attentively by daylight at each individual article of furniture in it, from the carpet on the floor to the crystal lustre hanging from the ceiling, and from the smart be-brassed stove to a wine-glass, and then go down East, and look into some den of poverty and helplessness there; or, better still, into some shop filled with the scouring and polishing of things, and you find the same thing, only cheaper. Why, the magnificent lustre in the corner gin-palace was cast from the very same mould, and sold by the same firm! The wine-glass and the gin-glass are the same articles. If you wonder at the cheapness of the cotton handkerchief and at the splendour of its monster flowers, you will be told that it is just as good as the silk, for which you pay much, and was actually printed from the same block,—not in far-off India, but perhaps but a few steps off. Wonderful are the things to be found in the far East, not from where are to be met with the spoils of Asia, but in Shoreditch! What a pity it is that Lothair did not travel there for a day before going so far as he did. Why, the fact really is, though the late Premier does not know it, that of all the trumpery (looked at artistically) that is to be found in the known world, a full-furnished West-end Belgravian drawing-room contains the pick of it, economically rich and expensive, but as art, as low and devoid of real artistic skill and thoughtfulness as are the articles to be found in the unknown East.

What a book, then, on "art" would this have been, if the wonderful author gone but a few hundred yards east of Temple Bar, and looked about him, before travelling so many thousand miles only to miss it, and to labour under the impression that "sustained splendour" is only to be found in Belgravian mansions; and to labour, too, under the still more fatal idea that these splendours are really "art," and artistically impressive and valuable. Of the mere costliness of the tailoring which he thinks so much about, and which at times almost overwhelms him, it is not, perhaps, possible to speak in this place; but the time may come, even in Belgravia, when fashion, even in dress, may mean something more than mere change from one thing to another, without the slightest reference to form, colour, fitness, beauty, or adaptability of any sort, as related to the human frame, whether of age or youth.

So much for "Lothair," but there is one ob-

servation in it, which concerns the art of the future, not a little noteworthy. The late and present Prime Minister agrees on few subjects of human thought, but with one in this book he does, for Mr. Gladstone has himself written a book about it. It is that the Aryan and Semite after all their labours, and works, and wanderings, represented as they are by the "Hellenes and Hebrews," have met and are destined yet to meet and to combine the treasures of their accumulated wisdom, and hence to secure the civilisation of man. So says this clever book, and so says Mr. Gladstone in his account of Homer and his Greeks. Now, if there is one thing more to be wondered at and admired in the original planning of this world than another, it is that of diversity in unity, or that provision that has been made for securing the individuality of the nations of the earth, and in the certain fact that each one of these nations has a course and a progress of its own, and an interest of its own; and that so far from anything possible to be got by "amalgamating peoples" or "fine arts," it would seem to be a "law of nature" that they be separate, and left to work out, each one for itself, a civilisation, an individualised humanity, and an art of its own. The Greek is one man, and the Jew is another.

But yet one thing more Mr. Disraeli might have done for the age in which he lives, and in this book he might have acknowledged it out,—viz., what sustained splendour, worthy of the name, or, in other words, fine art applied to humanity, ought to be, and really is, when true and as it has been, at divers times in the history of this world. What if, leaving Shoreditch, and its Jews, and Italians, and Irish, in all their deepened roughness, to take care of itself and themselves, and to go to merited and unmerited destruction, Mr. Disraeli had pointed out to us what sort of place a modern West-end Belgravian drawing-room would be, if filled, not with mere upholstery and fashionable shop furniture, with nothing to single it out from the commonest but enormous expensive, but with real and *good* fine objects of art,—things interesting, each one by itself, as the expression of the mental and bodily work of the artist who produced it,—e.g., an Etruscan vase? Why, if any lover of this splendour, even Mr. Disraeli himself, not a Lothair, who knows not one thing from another, were to go into the most splendid of modern drawing-rooms, and see the frightful tradesman's bill which would represent its immense value,—say ten, or twenty, or thirty thousand pounds' worth, and were to discover, up in some obscure corner of it, but a mere broken fragment of Greek, or even Roman art, it is absolutely certain that neither the art-lover nor the author of "Lothair" would think of pausing for a moment, or looking twice at anything else in the whole suite of apartments! Or, to venture on one more and not the least absorbing thought, suppose Mr. Disraeli had but only suggested that it be desirable by human art and ingenuity and perverseness, to disguise and disguise human nature thoroughly and effectually, it is but necessary to be dressed up in the newest and most "improved" of modern tailoring and millinery: the more fashionable and costly it is, the more certainly and surely and completely is the feat performed!

THE STRENGTH OF IRON.

INSTITUTION OF CIVIL ENGINEERS.

At the meeting on May 3rd, Mr. C. B. Vignoles, President, in the chair, the paper read was "On the Strength of Iron and Steel, and on the Design of Parts of Structures which consist of those Materials," by Mr. George Berkley.

The author stated that the strength of wrought iron varied with the quantities of work involved in the production of the form of the material tested. This was proved by the fact that a bar of iron 1 in. square, which would break with a strain of 26 tons, would, if drawn down to the form of wire $\frac{1}{8}$ of an inch in diameter, bear a strain of 40 tons per square inch. The strength to be relied on in practice would probably be best represented by the minimum strain that 1 square inch would bear without rupture, and by the amount of stretch which would take place in a given length before it broke. Iron could be obtained, at the current market rates, which would bear the following strains:—For plates, an average breaking strain of 20 tons per square inch, and a minimum breaking strain of 19 tons per square inch, and an average stretch of 1 in. in 12 in. length. For \perp and T irons an average breaking strain of 22 tons per square inch, and

a minimum breaking strain of 21 tons per square inch, and an average stretch of $1\frac{1}{2}$ in. in 12 in. lineal. For rivet iron an average breaking strain of 18 tons per circular inch. For bars intended for chains, couplings, &c., an average breaking strain of 22 tons per square inch, and an average stretch of 1 in. in 12 in. lineal. For ordinary classes of work, let at competitive prices, stronger iron could only be obtained with difficulty.

In the consideration of the practical limit of strain to which 1 square inch of wrought iron could with safety be subjected, the principle upon which such a limit is required, the erroneous impression, as to the degree of strain being 10 tons or 12 tons per square inch which first produced "permanent set," was pointed out; as well as the apparent discrepancy between the results of ordinary observation and of minutely manipulated experiments, such as those of Sir William Fairbairn and Mr. E. Clark, wherein permanent set had been observed after 3 tons per square inch had been imposed on the iron, and was explained by the difficulty of registering such small amounts of set as $\frac{1}{1000}$ part of an inch in 5 ft., which resulted from a strain of 10 tons per square inch.

Attention was drawn to the fact that upon the application to 1 square inch of wrought iron of strains exceeding about 12 tons, the measure of stretch per unit of strain, which had previously increased in a certain proportion to the units of strain applied, increased with a greater and progressive rapidity. It was also noted that the amount of stretch actually produced by the imposition of a strain of about 12 tons per square inch, would be sufficient frequently to preclude the use of wrought-iron so strained.

In illustration of the extent of the repetition of strains on iron and steel, it was stated that with blows powerful enough to bend bars of cast-iron through one-half of their ultimate deflection (that was to say, the deflection which corresponded to their fracture by dead pressure) no bar was able to stand 4,000 of such blows in succession. And also that when a bar was thrown into a violent tremor, then "when the depressions were equal to one-half of the ultimate deflection, the bars were broken by less than 900 depressions." A piece of rail weighing 69 lb. per yard, made of Bessemer metal, which was placed firm in the ground, and upon which one blow from a weight of 1 ton fell, falling through 30 ft. without breaking, though bending about 7 in., broke with a weight of 3½ ct., falling 15,400 times through heights increasing from 1 ft. to 10 ft. by increments of 6 in. each time. With wrought iron, it appeared from an experiment of Wm. Fairbairn that when it was desired to repeat the application of strains from two to three million times it would not be prudent that such strains should exceed 7 tons per square inch of section.

It appeared from these considerations that the practical strength of wrought iron in structures of a permanent character could not be estimated at more than 12 tons per square inch, when such an amount of strain was repeated more than a small number of times; and that it should not be calculated as exceeding 7 tons per square inch when strains of this amount would be applied to it many times daily. In some of the principal suspension-road bridges it was said that a maximum of about 9 tons per square inch of section in tension was imposed on extraordinary occasions, while railway bridges were frequently subjected to the maximum calculated strain, a limit of 5 tons being in this country generally adopted. From this practice it was assumed that a margin, for errors of design and for other practical defects, of only 25 per cent. was allowed in permanent structures. The importance of sound principles of design was, therefore, maintained. The parts most difficult to design were the connections of portions of the structure with riveted joints.

The author next directed attention to the unsatisfactory state of the knowledge of the profession respecting the power of stress of various proportions and forms to resist compression, and stated his belief that the experiments had been proposed to facilitate calculations for determining the strain which such columns would bear, produced results which agreed neither one with another, nor with any series of such experiments as had been tried. It seemed probable that, for the present, error might be best avoided by referring to the results of experiments that had been made upon columns, &c., the conditions of which were analogous to the case under consideration.

ARCHITECTS' DRAWINGS: THE LIVERPOOL ARCHITECTURAL SOCIETY.

A special meeting of the professional members of the Liverpool Architectural Society was convened at the office of the president (Mr. H. H. Vile), on Tuesday last, to consider "what further steps (if any), should be taken by the society, in order to strengthen the position of the profession with regard to the question of the right of property in architectural working drawings, and render assistance to Mr. E. M. Barry in resisting the demands which have been made upon him by the First Commissioner of Works."

A good many written statements and opinions, from various members of the profession, as to the custom with regard to possession of drawings, were laid before the meeting; all the writers concurring in the view that after the completion of a building, the drawings reverted to the architect as his property, and stating that they had never given up any drawings under such circumstances, except as a matter of courtesy in special cases; though as to the ownership of drawings of buildings not carried out, the writers were not so unanimous, one or two members being of opinion that the question was in this case a doubtful one. We have space for only one or two quotations, which bear strongly on the general principle of the matter. Mr. Kilpin, in enforcing the rule that the client pays for the building, not for the drawings, observed that,

"When a picture is ordered, the purchaser, when he receives it, never thinks of claiming the preliminary sketches which are necessary for the production of any great work; so an architect's drawings, when furnished with the possession of the finished building, without demanding the preliminary drawings necessary to produce it."

Mr. H. P. Horner was of opinion that,—

"The production of the building is the end and result desired, towards which the architect's drawings are his intellectual tools, just as the models and casts made by a sculptor, or the sketches of a painter, are there for the production of works to their respective arts; and to the possession of such implements of their art I have never heard of any pretence of a claim by patrons or clients."

Mr. T. D. Barry observed that,—

"It was extremely common for architects, during the progress of an extensive building, to make detail drawings of the interior of the building, and to send such a case the client could not lay claim to the boards so supplied."

The chairman also was of opinion that,—

"If the drawings and specifications are to be claimed as a right by the client, either before or after the architect's final certificate has been given, the position both of the architect and builder will be much prejudiced; for should any little matter in the building works not agree to the client's view, and a specification should be made, the client might use these as levers for his own advantage against both the architect and the builder; for we all know that it is great of the works, and not of the architect, at the suggestion of the client, and solely for his benefit."

Another leading member was of opinion that,—

"The idea of a client claiming the drawings and specification was too absurd to discuss; a man may with equal propriety claim the sections from his barber after his hair has been cut."

In illustration of the possible consequence of the client having possession of the working drawings, it was mentioned by another member of the society that a gentleman who had bought a house recently completed from his designs, had endeavoured to obtain the drawings of it from the contractor, with the avowed object of holding another house like it in another part of the country. Other statements, from Mr. G. Williams, Mr. Hornblower, Mr. Bonli, Mr. Mercer, Messrs. Atkinson (of York), and others, were to the same general effect; Mr. G. H. Barrett, Mr. and Mr. Deacon also expressed similar views as to the practice in the profession of civil engineering: one member only among those present, Mr. Fawcett, dissenting from the general opinion.

With regard to the possibility of offering financial assistance to Mr. Barry, it was decided that the Manchester Society of Architects had offered to join in any general subscription to assist him in the legal expenses he might be put to in contending the matter, and in pursuance of the same idea the following resolution, proposed by Mr. H. P. Horner, and seconded by Mr. T. D. Barry, was adopted by the members present:—

"That, having already pledged ourselves, as members of this society, to give our best and ablest support to Mr. Barry in resisting the claims of the First Commissioner of Works, we further pledge ourselves, in the event of material aid being required in carrying on the contest to afford the best assistance in our power, and to influence the members of the profession within our knowledge towards the same end."

THE LATE MR. HANDSIDE BIRCHIE, SCULPTOR.

This able Scottish sculptor has recently died. He was born in Musselburgh, near Edinburgh, in the year 1804; and, from his earliest youth, perseverance and enthusiasm—the sure tokens of genius—were marked features in his character. He was a modeler in his childhood. His father was an ornamental plasterer. Mr. Leonard Horner aided him in his youth. He went to Rome, and through the influence of the Duke of Hamilton and Earl of Minto he was received into the studio of Thorwaldsen. He produced many well-known works in sculpture, among which may be mentioned the architect of the Scott Monument, who was an intimate friend of his. For many years he was an exhibitor with the Scottish Academy, of which body he was elected an Associate in 1845. In 1847 Mr. Ritchie was commissioned to execute for the House of Parliament a statue of the architect, Giovanni Battista Piranesi, and he executed his commission to the utmost satisfaction of the Commissioners. He long devoted himself principally to architectural sculpture, which, from its size and nature, is not adapted for an exhibition-room. Every one who knows Edinburgh must have observed the admirable works of this kind at the British Lian Company's Bank, St. Andrew-square; in the pediment of the Commercial Bank; and on many other commercial buildings. One, however, is deserving more than a passing notice—the very fine monumental group of the Rev. Dr. David Dickson, confining the widow and orphans at the West Church. He sculptured the four colossal heads representing the Seasons at the Duke of Hamilton's Mausoleum at Hamilton Palace.

RESTORATION OF THE SOUTH AISLE OF ST. NICHOLAS'S CHURCH, GREAT YARMOUTH.

WITHIN the past twenty-two years the parish church of St. Nicholas, Great Yarmouth, has undergone various restorations. There are few, if any, of its place which surpass it in point of size, it being 230 ft. long by 108 ft. broad, exclusive of the projecting portions of the transepts. The extreme width is 154 ft. It has been computed to have an internal superficial area of about 23,000 ft. square, whereas the average of London churches is but 8,000 ft., and they contain only 1,000 persons on the floor instead of from 4,000 to 5,000, which is the amount of accommodation afforded within the walls of this structure. These parish churches have the greatest proportions to compare with; St. Paul's, London, 2,000 ft. square; St. Botolph's, Boston, 22,270 ft.; St. Botolph's, Newcastle-on-Tyne, 20,110 ft.; Holy Trinity, Hull, 20,036 ft.; and Holy Trinity, Southwark, 18,200 ft.

The aisle recently rebuilt is that which was erected in the thirteenth century to supercede the narrow one of the Early Transitional Church of which the present nave was a part. It is of the colosseal width of about 40 ft. internally, and is lighted by a triplet in the west end and seven windows on the south side, of the latter of which the internal jambs and arches were the only original portions which remained; these had on the outside been filled with Perpendicular mullions and tracery of a poor type. Mr. Seddon, the architect employed, has restored the early portions and swept the rest away, having superceded them by three light windows of an Early Geometrical character in harmony with the rest of the structure. The alternate windows vary in detail, and form a feature from the principal approach from the town. Between each pair of windows a buttress, finished with a gabled canopy, rises to the level of the parapet. The great window triplet, of which sufficient traces were left to enable the architect to effect a strict restoration of the original, except that the tracery of the window openings, if any, had been obliterated, have been treated in the same character as the side windows, with which they now harmonize. An entirely new roof has been placed over the aisle. The material is of Meneil, but the ceiling below of an arched form, is of oak. This is divided into panels by moulded ribs, with the old heraldic bosses of the former one replaced at the intersections. These ribs and bosses and the wooden cornice above that of stone have been decorated with colour.

The roof is covered with lead, and its ridge with an ornamental cresting, and the gables

copied with stone with carved crosses at each end of the aisle. Some fragments of polychromatic decoration were discovered on the interior of the walls, and as the new plaster would at present have destroyed any reproduction of them, they have been copied on paper and temporarily fixed to show the effect which it is hoped may ultimately be reproduced in a more permanent manner.

One of the windows has been filled with stained glass in memory of the late town clerk of Yarmouth, Mr. Charles Cory. There are three subjects, one in each light, representing the greater prophets, Jeremiah, Ezekiel, and Daniel. Over each figure an angel bears a scroll. Another window has also been partially filled with stained glass at the expense of the Sunday-school teachers. The subject is the representation of Moses, with the Ten Commandments. The figures are by Mr. Rosseter, the artist; and the glass has been executed by Messrs. Saunders.

Externally the church has received great additional height and consequent dignity, having been dug out of a hole, the arch to the depth of many feet, which in the lapse of ages accumulated around and about the base course, having been excavated and removed, a space falling from instead of to the walls as heretofore, having been paved with pebbles in ornamental patterns to a surface drain carried entirely round the restored portion of the church. The level of the approaches to the church have been re-arranged accordingly, and an improvement has been thereby effected, but which needs hereafter to be carried out further when the rest of the restoration is proceeded with. The porch now calls for improvement.

THE CONSTRUCTION OF NEW GAS AND WATER WORKS IN YORKSHIRE.

THE present season seems to have been chosen for the construction and extension of new gas and water works to a greater extent than has been the case for some time, and hence builders and others interested in the construction of such works will not object to learn that in the West Riding of Yorkshire, at least, a good deal of work will be found in this branch of the trade. Most of the improvements and extensions which are about to be made are connected either with the opening out or the further development of works in places which are rapidly rising, and which will in a few years rank amongst the most important of Yorkshire towns.

The borough of Barnsley have scarcely completed a very fine street at Lightbrough, near the Yorkshire Moors, at a considerable cost; and the town council have just accepted tenders for the construction of two service reservoirs, a cottage, and other works at Champney Hill, about three miles from the borough. The works, which have been constructed under the superintendence of Mr. Hawksley, may be said to be equal to any in Yorkshire.

The town of Keighley, which at present is aspiring to Parliamentary honours, is just now taking active steps to secure for the inhabitants a reliable supply of pure water. During the past week tenders were opened for the construction of a service reservoir in the country of Lancaister, and a compensating reservoir near that town, together with the necessary works connected therewith. The engineers entrusted with the superintendence of the work are Messrs. M'Clean & Millman, of Westminster.

The rapidly rising town of Castleford will shortly possess its own waterworks. The water is to be obtained from a pumping shaft in Wheldale-lane, and a reservoir is in course of construction at Red-bill.

At Otley, a thriving town near Leeds, new waterworks are in course of construction at the present time.

The inhabitants of Normanton are also busy discussing the best mode of obtaining good and cheap water.

It will thus be seen that undertakings of no small character, involving the outlay of considerable sums, are about to be commenced, so that a good deal of work may be looked forward to from this source.

The extension and construction of new gasworks in Yorkshire seem to be larger and even more extensive than are the contracts for waterworks at the present time.

The Barnsley Gas Company are laying out a new plant at Old Mill, a suburb about half a mile from the borough, so as to enable them to supply the more elevated parts of the town and

district. The works are of an extensive character, and include sheds, retort-houses, and all the necessary building for carrying on a very large business. The buildings, which are of a neat and ornamental character, are being erected by Mr. W. Robinson, of Barnsley, builder, under the superintendence of Messrs. T. & C. Hawksley, civil engineers.

At Wemthwell, near Barnsley, a new company has been formed, on the limited liability principle, for the purpose of supplying the district with gas. The necessary works are in the course of construction, and it is expected that gas will be supplied to the inhabitants by the end of August.

New works are in the course of construction at Normanton, and preparations are being made to cross eight retorts, benches, or ovens, and thirty clay retorts.

The Bingley gasworks are also about to be extended, and the company now find it necessary to lay over 4,000 yards of new mains.

At Gomersal, another prosperous West Riding town, the works are to be enlarged. A new gas-works is about to be erected on a piece of land adjoining the present plant, so as to meet the requirements of the district.

The Shipley Gas Company, near Leeds, are also about to make alterations and extensions. The company propose to erect a new retort-house, engine-house, meter-house, &c., make other alterations of their works, which have been rendered necessary by the increasing population and the development of trade generally.

THE MANUFACTURE OF PORTLAND CEMENT.

INSTITUTION OF CIVIL ENGINEERS.

On Saturday last, the 21st of May, a party of nearly fifty of the students of the Institution of Civil Engineers, under the guidance of Mr. Brunles, member of Council, visited, by special invitation, the cement works of Messrs. John Baileys White & Brothers, at Swancombe, Kent, for the purpose of receiving an explanation as to the process of the manufacture of Portland Cement. The invitation was given by Mr. G. F. White, now one of the oldest associates, who was present at one of the weekly meetings of the students, when a paper was read by Mr. Preston, Soc. Inst. C. E., on the subject of the manufacture of cement. All the members of the firm were present to conduct the visitors over the manufactory, which stands on the banks of the Thames, and covers an area of fifty acres. The mixing of the chalk and the clay, in the proportion of three parts of the former to one part of the latter, takes place in a series of double circular mills, about 12 ft. in diameter, and 3 ft. deep, touching one another, and each furnished with revolving harrows, to secure the perfect reduction of the particles. The chalk is delivered in lumps into one of these mills, which is kept constantly supplied with water, and the liquid passes thence to the other mill, where it receives the clay. After remaining long enough under the harrows the mixture is pumped up to a height of some feet, whence it flows by gravitation through wooden spouts into large reservoirs called "backs," where it lies till drainage and evaporation have disposed of the greater part of the water. While the liquid cement is in the "backs," samples of it are constantly taken and burnt in a small kiln, so that the proportions are ascertained, as soon as detected and remedied. The residue is then transported, first to drying stoves, and afterwards in due time to the kilns, where it is to be burnt. These are constructed on the endless principle, and are bell-shaped. They are about 30 ft. high, and are fed at the top with alternate layers of cement and gas-coke. As combustion goes on, the clinker is drawn periodically from the bottom of the kiln; and, after the rejection of any that is insufficiently burnt, it passes to the mills for grinding. Special care is taken to do this thoroughly, as the strength of cement is found to be greatly enhanced by fine grinding. A visit was paid to the testing-room, where samples of the manufactured cement are made hourly through the day. Some of these were selected by Mr. Brunles, and the strain required for breaking them ascertained by the machine. The Messrs. White explained that the heavier cement, produced by excessive burning, were slow in setting, although ultimately acquiring a higher tensile strength than the lighter cement; but they expressed their opinion that

the quality of cement that would insure undoubted stability, without increasing its cost by the diminution in volume that is inseparable from a very high specific gravity, was the best suited for general purposes of construction. When the inspection was concluded, the students were entertained at lunch by Messrs. White, who explained that they would be ready, on all occasions, to contribute in every way to the furtherance of the technical education of the younger members of the profession.

ST. JOHN'S, WICK, NORTH BRITAIN.

On the 13th inst. this church was opened and consecrated by Bishop Eden, the Primate of the Scottish Episcopal Church.

The edifice, which is Early Decorated in style, is built from the design of Mr. Alexander Ross, architect, Inverness, and consists of north porch, nave, chancel, vestry, and organ-chamber, the west gable of nave being surmounted by a lofty stone bell-tower. The walls externally are of fine Caithness stone; in course; the dressings, of white Corvosa freestone.

Entering the porch, through a moulded archway, resting on carved impostae, we pass into the nave, which consists of four bays, lighted by a three-light traciced window at west end, and by lancets along the side walls. The chancel rises three steps above the nave. The chancel arch is of stone, well moulded, and with carved impostae. The chancel is lighted by a three-light east window, and by a cinquefoil window on the north side. The roof is of varnished pine, the principal complex resting on moulded arch ribs springing from stone corbels in the walls. The benches, choir-stalls, and pulpit are all of red pine, varnished; the lectern of iron and brass.

The font, which stands at the west end of nave, is of Caen stone, with carved bowl and capital, resting on a shaft of polished red granite.

The windows are uniformly filled with plain cathedral quarry glass. The church is seated for about 150.

An interesting fact connected with this church is, that it is the first Episcopal church built and consecrated in Caithness for the last 200 years, and the organ is the first introduced into the district.

THE WORKS OF WREN AND RESTORATION.

Sir,—As an ardent lover of architecture, and one who has a firm faith in the reputation of the great architects, established as the masters of their art by the consent of centuries, may I beg space for a few observations upon the late meeting of the Institute of Architects, reported in your Number of the 21st inst.?

I do not pretend to assert my own taste, but I believe in the Church of Christ. With this view, ever since I have held a seat in Parliament, I have lost no opportunity of endeavouring to preserve his works from the hands of the destroyer. In 1860 I inserted a well-known clause in the "Union of Benefices Act." In 1865 I did my utmost, unsuccessfully without result, to induce the Government of the day to purchase the Gateway of the "College of Physicians," ruthlessly pulled down, to widen Warwick-lane; and in 1868, with the assistance of the City authorities and the then First Commissioner of Works, I succeeded, notwithstanding one opposition, in securing the preservation of the tower of St. Mary Somerset, then under sentence of removal.

But utilitarian destructives, without the pale of art, are not the only enemies the works of Sir Christopher have to fear. There are other foes, within the pale, and in places of their action, and more deadly in their aim. I allude, in plain terms, to the modern church restorers, and their proceedings during the last few years. Not long ago, an eminent modern "Goth" actually prepared a plan, happily defeated, to take down the fine church of St. Dunstons in the East, in order to erect in its place an eccentric extravagance of his own composition. Then followed the lamentable so-called restorations of St. Michael's, Cornhill, and St. Mary's, Aldermanbury. Sir James's, Garlickhithe, fortunately escaped with a few ugly scratches, and the addition of an ugly spire; but St. Andrew's, Cannon-street, which fell view of the crowds who daily frequent the great railway station, as a striking example of the incapacity of a builder to whom detail and proportion are equally unknown. I should have hoped that this last

sacrifice might have appeased the mania of the "Goths" for some time to come, but now we are threatened with a crusade to "repair and beautify" the City churches, and to deform and deface them to suit the crochets of Deionval revivalists. With these facts before him, Professor Donaldson might well express his astonishment at the period at which we are arrived, and point to the consternation which any proposal to improve the architecture of Wren would have created in the profession fifty years ago! I concur with the eminent and learned professor "that we have now reached an irreligious epoch as to architecture." And why is the epoch thus irreligious? Simply because our dabblers in art, misled by the follies of Puginism, Ruskinism, and Pre-Raphaelitism, and other theories of æsthetic charlatans, have never acquired any true principles; and, with the irreverence of ignorance, venture to sneer at works of the highest merit, which this age, at least, will never reproduce.

Until modern church-builders come to their senses and learn a little humility, as well as other necessary things, I think we had better let Wren alone; for my own part, I prefer to see his unvarnished interiors in their dirty and dingy condition rather than arrayed in the gaudy vulgarity of St. James's Hall, the Alhambra Palace, and the New Foreign Office.

House of Commons.

G. C. BENTINCK.

A PLACE OPEN TO MERIT.

We understand that there is a vacancy in her Majesty's Office of Works for an assistant surveyor. The salary is 500*l.* per annum, increasing to 700*l.* The First Commissioner, we learn, has determined to receive applications from duly qualified persons, and to select from them on their merits, without reference to patronage.

THE BELFAST EXHIBITION.

The Belfast and North of Ireland Workmen's Exhibition, in the Ulster Hall, has been opened by the mayor, in presence of other official personages, and the public generally.

The Exhibition occupies the Minor and Minor Halls, and a considerable space of ground at the northern side, which has been prepared for the purpose. This superadded space is allotted to machinery, the Minor Hall to an ample fine-art collection, and the Major Hall to general produce. It is not exclusively a Workmen's Exhibition, in the sense of being confined to a display of articles produced immediately and directly by workmen. A considerable demand upon the space was made by manufacturers and others who are also large employers. Still, the display made by working men is sufficient to justify the name of the Exhibition, and to afford much promise for the future. As a typical assortment of the manifold industries of the province, it is equal to what had been anticipated by friends of the movement. The hall is gay with flags and banners, and brilliant cases of goods of every description. The centre is occupied by a trophy, composed of various kinds of linen, which, commencing on the floor, stops short just inside the lofty ceiling. Separate spinning-wheels, made by Mr. McCreery, are displayed, and many people, says our authority, the local *Scotsman*, seem to wonder what they are. On every hand there are assortments of fabrics illustrating the industry which has made this province what it is. There are also cases of architectural embellishments and building materials, among which is placed a bust—"The Sea-King," by McDowell, lent by Lord Dufferin; sculpture and upholstery; with a long array of ecclesiastical.

The Lord Lieutenant was present at a conversation in the evening of the day opening.

THE SANITARY TEACHINGS OF HISTORY.*

THE health history of England, up to the close of the eighteenth century, may be distributed, Dr. Guy, the well-known sanitary investigator, thinks, into three periods, as follows:—

1. From the earliest time to the middle of the fourteenth century, the epoch of the Black Death.

* Public Health: a Popular Introduction to Sanitary Science; being a History of the Prevalent and Fatal Diseases of the Human Race, from the Earliest Times to the End of the Eighteenth Century. By William A. Guy, M.D., F.R.S., &c., Professor of Forensic Medicine and Hygiene in King's College, London. H. Kegan Paul, Strand, 1870.

2. From the middle of the fourteenth century to the year 1666, the date of the Fire of London.

3. From the year 1666 to the end of the eighteenth century.

The first period is marked by scanty records of sanitary conditions; the second, by the occurrence of the Black Death, Sweating Sickness, and Plague, concerning which we possess fuller details; and the third, by the great discoveries and reforms in connection with the well-known names of Baker, Cook, Howard, and Jenner.

Of the London Plague we have before occasionally written, as have many others. We shall, therefore, now glean a few particulars as to its dread predecessor, the Black Death, from Dr. Guy's very interesting lectures in King's College, under his new professorship of Hygiene. The Black Death, though usually treated as an aggravated outbreak of the Oriental plague, which is, by very general consent, traced to Egypt as its birthplace, has had assigned to it an origin more remote. Hecker fancies he finds the source of it in China in 1353, fifteen years before it showed itself in Europe; and Anglada, in his "Étude sur les Maladies épidémiques," traces it by three distinct routes from Black Cathay,—the northern route by Bokhara and Tartary, the Black Sea and Constantinople, having brought it by the Bosphorus into the Mediterranean, and so into Europe. In the interval between 1353 and 1357 China was visited with drought, famines, floods, and earthquakes, and swarms of locusts, and pestilence; and at length, in 1348, Europe began to suffer by the same visitations. The island of Cyprus was converted into a desert by a frightful earthquake, hurricane, and inundation, following the outbreak of the plague, and the same year, 1348, an unexampled earthquake, lasting several days, visited Greece, Italy, and the neighbouring countries, shaking down or swallowing up whole villages, and inflicting severe injury on every large city. Others occurred, from time to time, in the south of the continent of Europe, and in England, up to the year 1369.

The Black Death reached England in August, 1348, appearing first in the county of Dorset, thence spreading through Devon and Somerset, to Bristol, Gloucester, Oxford, and London; in fact, through the whole country. It took three months to reach London. Few places are believed to have escaped, and only tenth parts of the inhabitants were thought to have remained alive. There is no room to doubt that the symptoms of this Black Death were those described as belonging to the Oriental plague. All the accounts that have come down to us, from the imperial author, Kantakuzenos, who saw the disease in Constantinople; from Boccaccio, who witnessed it at Florence; from the scholar, Raymond Chalin de Vinaro; and from the "brave" Guy de Chauliac, who practised at Avignon, all the accounts conspire to justify Hecker's statement, that "it was an epidemic plague, marked by inflammatory boils and carbuncles, which broke out in no other febrile disease;" to which must be added, that it often proved fatal on the second and third day, in the midst of profuse discharges of offensive-smelling blood from the lungs, such discharges as we now know to attend a characteristic gangrene of the lungs and organs. Guy de Chauliac, than whom we can have no better authority, divides the whole epidemic of seven months into two stages of two and five months respectively, of which the first was characterised by the bloody discharges from the lungs, the second by the characteristic plague-buboes.

The mortality due to this disease cannot be exactly ascertained, from want of censuses and registers of death; but doubtless it was on a grand scale. We infer this partly from numerical statements and partly from more general accounts, which take them by cities, communities, and nations.

Alippo lost 500 a day; Gaza, 22,000 in all; and Cairo, 15,000. Genoa lost 40,000; Parma, the same number; Naples, 60,000; Siena, 70,000; Rome an incalculable number. Venice, out of a population of 200,000, lost 70,000; saw ninety families extinguished, and lost its grand council of 1,250 reduced to 350. In Florence, 100,000 perished between the months of March

and July. In Spain, Valencia lost 300 a day, and many districts of Barcelona were depopulated. In Germany, at Vienna, the deaths were 1,800 in one day, and 40,000 in all. At Erfurt, 12,000 were interred in one cemetery. In France, at Lyons, 8,000 died in the first three days, 150,000 in the city and its environs, and as the very first, sixty-six monks in a Carmelite monastery; there, too, died Petrarch's Laura. Montpellier was very nearly depopulated, ten out of twelve consuls died, not a monk survived, and few medical men. Marseilles lost in one month 46,000, and in his hospital his chapter all died. Narbonne suffered a loss of 30,000, from which it never recovered. Paris lost 50,000, and St. Denis, 16,000; and for many days together the Hôtel Dieu sent 500 corpses to the Cemetery of the Innocents. We lost here in London 100,000, out of a population very small by comparison to what it is now.

Passing from cities to nations, we find the mortality in China, whence the plague is supposed to have sprung, set down at *thirteen millions*; in Germany, it was 1,244,434. Europe is supposed to have lost an aggregate of forty millions, and Asia 400 millions (exclusive of China) twenty-four millions.

Here, as throughout Europe, the pestilence had antecedents worth noting. The times were very barbarous. Kings were in constant conflict with powerful subjects or engaged in external wars; and the worst fortunes, as the world was beset with marauders, the seafaring man a sea-robber; human life was of little account; witches and heretics were burned alive, and the Jews subject to cruel tortures; "wild passions, severity, and cruelty, everywhere predominated;" and what is more to our present purpose, the cities were, as we have already said, overcrowded, kept in a filthy state, and surrounded with stagnant ditches." These conditions, even in those early times, were recognised as favourable to the spread of pestilence, as were personal uncleanness and imtemperate habits.

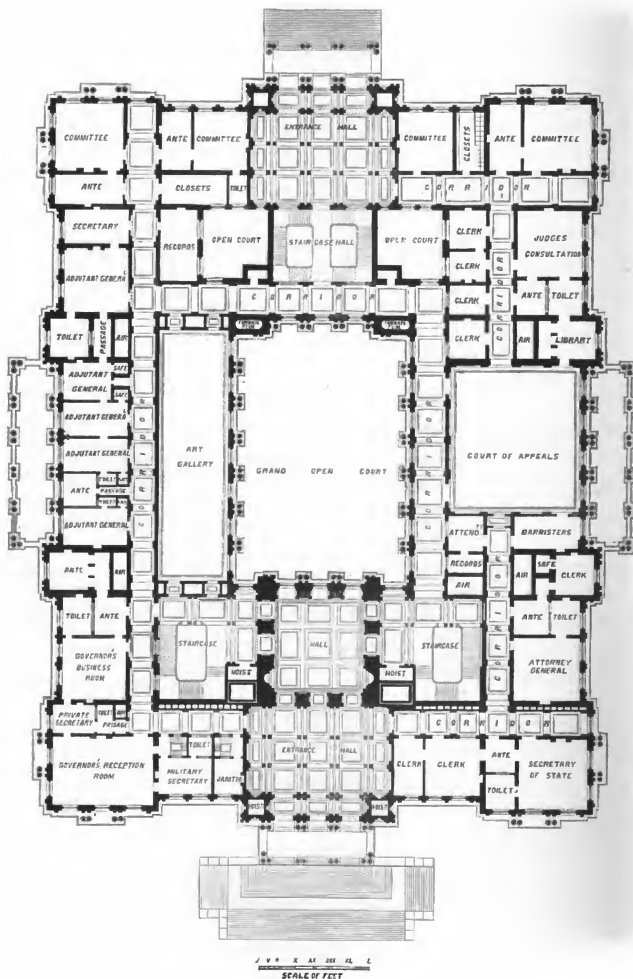
The cities in those days were so built as to be eminently favourable to the overcrowding now so universally recognised as a most efficient cause of disease. Armies, also, which are crowds in the worst form, were in constant accumulation.

The accounts of the plague in England are in harmony with those which have come to us from Italy and other parts of the Continent. We read of the same atmospheric disturbances, with the addition that its advent was preceded by great floods. "It rained from Christmas to Midsummer, without one fair day;" and when it left us, "there followed a great dearth of cattle; after that a dearth and scarcity of corn. We read of 5,000 cattle dying in one pasture, of brats and sheep going wild through fields and corn;" and dying in holes, furrows, and ditches, in innumerable multitudes over the whole kingdom, from want of keepers; of the scarcity and insolence of servants, and consequently, the next harvest, of corn rotting in the fields from want of hands.

In England, as elsewhere, the Jews were accused of poisoning the springs, and this accusation Short traces to the fact that the water was pestiferous even to the fishes. Of this widespread belief in the poisoning of wells and springs of water, not in the time of the Black Death only, but during all great epidemics, as Dr. Guy observes, recent discoveries have rendered it highly probable that the people were not always mistaken as to the fact of the poisoning, but only as to the persons who poisoned them. In those remote times the state of the places in which men lived, and their habits of life, rendered the pollution of drinking waters by human excreta inevitable, and so secured the rapid spread of any contagious disease that happened to prevail.

The dwelling and personal habits of the English people in town and country were such as to encourage to the utmost the pestilence we bred or imported. Judging from the descriptions of foreigners, we were characterised by bad housing and gross feeding.

The people lived, probably somewhat after this fashion. Their houses, and most of their buildings of every kind, were of timber, the houses "slightly set up with a few posts and many radele," "nast all over with thick clay to keep out the wind," with mndry rooms above and beneath, "covered with straw, sedge, or reed, and roofed with tiles or shingles, and with floors of mud." In the country part, the houses, stables, and offices were under one roof. The fires were lighted against a *res-dee*, and the



NEW STATE CAPITOL AT ALBANY, NEW YORK.
Plan of Ground Floor.

CAPITOL FOR THE STATE OF NEW YORK, U.S.—MORRIS, FULTON & LAYNE, ARCHITECTS.



SCIENCE FOR THE PEOPLE.

THIS volume, in its sub-title, is called "a memorandum on various means for propagating scientific and practical knowledge among the working classes, and for thus promoting their physical, technical, and social improvement." It is "addressed to Lord Henry Gordon Lennox, M.P., Chairman of the Council of the Society of Arts."

Mr. Twining here gives an account of his varied progress in teaching the working classes useful knowledge, and adds some considerations respecting the general system of elementary and industrial instruction which he conceives to be wanted by these classes in this country, and in which educational facilities, like those he is engaged in organising on a small scale, might acquire a full development.

Mr. Twining says in the outset that he has,—

"Felt all along that the most practically useful lessons would be those teaching permanent conditions, organized on more strictly educational principles, so that we might not only see the things to be adopted or rejected, but learn at the same time the 'reason why.' It was in this spirit" (he adds) "that I began in 1856 to form the permanent and educational exhibition of the things appertaining to domestic and sanitary economy, which from its being devoted to the furtherance of what may be called Economic Knowledge, has taken the name of Economic Museum.

It is true that the various modes of diffusing this Economic Knowledge among the people that the following pages are chiefly derived, cannot be deemed to compass it with a precise definition. To attempt to do so, would be to give a description which enables it to promote man a physical well-being, and to make him a more useful member of the community of his kind; but it may be briefly said to embrace in this essentially utilitarian direction everything that every one would be disposed to employ only as a means to some other end of considerable importance for all classes of society, and especially for those whose income is small, to know how their dwellings may be made more comfortable, how their food may be made more palatable; what household improvements they may derive from the discoveries of science, or borrow from the experience of others; what they should avoid, and what they should wear; what food they should eat, and how it ought to be cooked; how they may distinguish things of value from those which are worthless; how they may really cheer, from those which are cheap only in appearance; and in short, how they may live with judgment, and with the best money's worth for their outlay.

To make it more clear that Economic Knowledge ought to include these scientific elements as well as their practical applications, I sometimes call it Economic Science, or substitute the more comprehensive expression of Science of Common Life; but a title which I shall take the liberty of adopting more frequently, having obtained for it the sanction of eminent scientific friends, is Practical Philosophy. It indicates more clearly the union of Science and Common Sense for our practical guidance in daily life.

family life. He has found to be the greatest bar to the diffusion of sound principles of Domestic and Sanitary Economy is the almost total absence of preparatory knowledge. The student has to be taught the rudiments of the community at large, and the consequent want of ability on his part to enter into the *particulate* of the merits or demerits of the various systems of domestic economy proposed as substitutes. An artisan and his wife visiting the admirable Food department of the South Kensington Museum, the student is struck by the *particulate* of some of the sensational illustrations and labels; but by accident he sees all at once that relates to the chemistry of nutrition, and he is so much interested that he asks the attendant for a daily leaf in accordance with a scientific dietary. They feel, indeed, as would feel any classical scholar if he were to read a leaf through the Greek or forerent with a botanical word on the Fucus, that the student is a mushroom he had never touched before. He would rather have the suggestion, but prefer sending for the old artist to the old artist.

In speaking of free popular lectures on the science of common life, organised in connection with the Twickenham Economic Museum, Mr. Twining states that his experience of four seasons is decidedly in favour of free admissions. On two or three occasions he has, in order to conform to the practice adopted at certain institutions, or by way of experiment, consented to a charge being made for reserved seats, or to the levying of a penny on non-members; but the result has been invariably unsatisfactory. The audience has been small, and the lecture has been insignificant, the attendance has been diminished, and as for orderly behaviour, that of the free audiences could not be surpassed.

In his remarks on practical bionomy, or the science of common life, as a part of primary education, the author says that his scheme (in which he includes the education of girls) calls for a specially trained host of teachers, male and female, not conspicuous for their proficiency in one science and their ignorance of the rest, but possessing a well-selected and well-arranged assortment of scientific knowledge, elementary and applied, embracing the whole of the normal requirements of common life.

The volume contains an account of Mr. Twining's experiments at the Lambeth Baths, and remarks on science as a part of technical instruction: on the educational wants of our

artisans, and other important subjects; together with appendices, containing a synopsis of the Twickenham Economic Museum; a programme of popular lectures; suggestions for a district museum; and other supplementary notes.

EARLY ARCHITECTS IN BATH.

IN the course of a paper, by Mr. Irvine, "On Recent Roman Discoveries in Bath," recently read there, the writer said:—

Some information from the minutes of the Corporation may not be out of place here, relative to the Royal Baths and Pump-room. From these minutes I find that although Mr. T. Baldwin had been for some years connected with the Corporation as their surveyor or otherwise, yet it is only on the 3rd of October, 1791, that he is directly elected as their "architect and surveyor," at a salary of 106*l*. Scarcely do we gaze on the water of the King's Bath, and see its gas bubbles reach the surface, ere they flicker in the sunlight, and go. Also on the 26th of the same month the same gas bubbles are seen to rise in order for Mr. T. Baldwin to deliver up all books in his custody, or have a bill in Chancery filed against him. In the minutes for the next year (1792), 11th June, the new private baths and dry pumps adjoining the King's and Queen's Baths are reported as fit for use. And on the 10th of July of that year we learn the fate of (the, I am afraid, stubborn and unfortunate) Mr.

Baldwin. "Resolved that Mr. T. Baldwin of this city, surveyor, be discharged from any future employment under this Corporation, and the Town Clerk to file a bill in Chancery against him, to make him deliver up all the books, papers, and writings belonging to the city in his possession. We may doubt whether Mr. Baldwin's plans for the dormitories and the much chance of preservation among his warring litigants. Besides this other minutes show that more than one person was connected with the work of it, would seem, not only the Pump-room, but also even the private baths, usually considered the work of Mr. Baldwin; for in the minutes for the 13th of September, 1793, one of the articles to be considered is a letter from Mr. Reveley to the Mayor, offering his services as architect to the Corporation, and containing also a demand for making drawings, plans, and elevations for the Pump-room and the baths. There not having been enough members present to form a hall, it is taken into consideration on December 10th, 1793, and the order is given that he is to be paid 27l. 9s. 6d. for his drawing-plans of the baths and pump-room. But this still does not exhaust the catalogue, as we find the Corporation committee who had to do with it requested, on the same day, to consult Mr. J. Palmer, the architect, upon the subject of finishing the said building. And the Committee's report, together with Mr. Palmer's plans and drawings, are presented on the 7th of January, 1794, and agreed on. On 10th of October, 1795, considerable amounts are agreed to be paid to him on account of it.

THAMES EMBANKMENT.

This railway, being now nearly ready, together with the stations, great exertions are made to complete the paved footway and to prepare the carriage-road for public use soon after the opening of this line to Blackfriars in the month of June. The station at Westminster Bridge being open, is connected with the line along the Embankment; the next at Hungerford Bridge; then at Norfolk-street, called the Temple Station; and lastly, for the present at least, at Blackfriars Bridge: thus dividing the distance in three nearly equal parts. This will be a wondrous accommodation for the public in general, and especially the residents of the City, the W., and N.W. districts. So soon as the extension is opened to Broad-street-hill, much additional accommodation will be afforded.

Now that the noble quay walls and landing-piers are finished, what cause most concern are the dingy and desolate aspect of the reclaimed foreshore, and the dread that the long intervals now exhibiting old ruinous stables, store-houses, and wharfs may not be occupied by buildings and fences suitable to the fitness of the site.

The river bridges, save those of the railways, are grand; the Houses of Parliament and the opposing reach as far as the Bishop's Palace, together with the range of seven hospital palaces, give dignity to the Westminster end; but the fine old achievement of Somerset House now

shows out in superior lustre, and seems to demonstrate the sort of elevation that is most appropriate to a riverine frontage. The interval between this and the Temple ought to be filled up with some design of a character suitable to the situation, with a frontage of about 300 ft.

Then comes the long space between Waterloo Bridge and the vast Hungerford Station deformity. To make a garden of such a sunken mud waste would be simply ridiculous,—a wide and beautiful promenade, flanked by varied buildings, but *not in street allineation*, is all that is needed,—space sufficient for an ornamental range of limes or planes ought to be left; but beyond this any small hortulan reserve in such a position would be only a nuisance.

The last and most valuable plot is that between Hangerford and Whitehall; and here the same treatment should be given, by opening out and extending Whitehall-plant together with Scotland-yard, leaving space for shrubs on the Parisian Boulevard, with seats at suitable distances. This would be a solace on the important Mall of the river; but gardens without shrub or flower would here become the resort of vice and obscenity. The site is most valuable for first-class houses, but the worst possible as a playground of children, who have the shade and picturesque shrubbery of St. James's Park so near at hand.

T. H. H.

T. H. H.

CONVICT LABOUR.

ON reading your very sensible remarks on the utilisation of convict labour, in your issue of April 23rd, it occurred to me that you might possibly be interested in learning that the work executed by convict labour at Woking was the whole of a prison, to contain 750 females, which, with the houses for the officials and all necessary offices for the prison, including two chapels, laundry for 300 women, bath-house, hospital, rain-water tanks, deep well, 10 ft. in diameter, &c., was built entirely by convict labour.

I was employed as the foreman or superintendent to carry out this work, and, as you may suppose, found great difficulty in starting; but, am pleased to say, brought the work to a satisfactory conclusion, the time occupied being three years and a half, and the cost of materials being about \$2,000. I am quite sure the work will bear favourable contrast with work executed under contract; and during the whole time I was in the employ of Messrs. Cahill & Co. I can truly say I never saw better workmanship.

I am now transferred to Pentonville Prison, for the purpose of making some extensive additions by convict labour also.

J. C. RADFORD.

THE INNER CIRCLE RAILWAY.

SIR,—The Mansion House Railway Station is a mistake, and is not really in the interest of the company or of the public; certainly not of the public.

One of the favourite ideas of the late Duke of Wellington was to have Eastcheap and the two Tower-streets widened; he even went so far as to have plans of the necessary widening prepared, and no doubt the plans exist somewhere to this day. No streets in London are more clogged with traffic than these three are; you can walk along them in the daytime faster than you can ride.

Mr. Haywood, the engineer of the Commission of Sewers, in his report to the committee of that body on the proposed Mansion House Station, dwells upon the notion that, in future, railways through very expensive parts of London must be carried out in connexion with street improvements, at the joint expense of the municipal bodies and the companies. Either work is too expensive for one of these to undertake, he thinks; they must do it together. In the matter of the completion of the Inner Circle Railway, it would seem that we may carry out some of the above ideas.

Let the Metropolitan Railway, which has ample funds for the purpose, bring its line in all its fulness to Tower-hill.

Let the Metropolitan District Railway carry its line as far as its funds will allow it, namely, to Queen-street Station.

To a third company, in conjunction with the Metropolitan Board of Works and the City, to widen, and carry a railway under, Eastcheap and Little and Great Tower streets, and part along Cannon-street (which would not need widening), and so fill up the space intervening

* By Thomas Twining, Vice-President of the Society of Arts. Goodman: Strand. 1870.

between Queen-street and Tower-hill. The sum estimated by the Metropolitan District Company's engineer, as the cost of the line and a half, of which amount 200,000 are for works, and the rest for land and compensation. Surely such a sum ought to do a great deal more than merely make a railway less than a mile long.

It seems to me that by the above plan the Inner Circle Railway would be completed, with stations nearly in the places originally fixed on; that the new street to the Mansion House would be saved from destruction; that a much-needed street improvement, the widening of Eastcheap, &c., would be effected at a small cost to the public; and that a dividend to all the three ways of a surprising kind would in a few years be certain.

TRAVELLER.

EDINBURGH FLATS AND WATER CLOSETS.

THE Edinburgh City Improvement Trust, the express purpose of which is to improve the sanitary state of the city, has just been engaged in expunging a sanitary clause in the articles of sale of certain of their fens, which clause one of the members, Mr. Gowans, had very properly got inserted, to the effect that all water-closets in the flats or floors of the houses to be erected should be ventilated directly into the open air. The reason adduced for expunging this clause is that the builders will not purchase the ground otherwise; but Mr. Gowans states that their chief objection is to another clause as to public-houses. It seems that one lot subject to the water-closet clause has been purchased by an architect, Mr. James Connel, and another by a builder; and we do not at all see why the builders should hold it to be a vital objection that they will be obliged to ventilate the closets directly into the open air. The arrangement whereby such closets occupy the centre of the dwellings or the common stairs, and not the backs of the houses, is a very bad one, and the arrangement can be easily remedied by a change of plan.

THE ARCHITECTURAL MUSEUM.

THE Report of the Council about to be issued states that the Council are now negotiating with the Royal Academy for an exchange of Classic for Gothic work; and with the South Kensington Museum for the loan of nearly 500 casts from Amiens and other places on the Continent and in this country, in return for casts from the Bartle-Prentiss Indian sculptures belonging to the Council; that the formation of a library of reference for students and architects has been determined upon, the sum of 100,000 towards the fittings, and some valuable works having been already promised by Mr. Henry Vaughan. It is hoped that other donations in books or in money for their purchase will follow.

It refers with gratification to the formation of the architectural art classes, under the direction of a joint committee of the Royal Institute of British Architects, the Architectural Association, and the Architectural Museum; each body contributing as it is best able: the Institute in funds and influence, the Association in the working arrangements, and the Museum in giving up a large and well-lighted room and the use of its collection. Too much cannot be urged in favour of this organisation, embracing, as it does, classes for,—

1. Drawing from the flat and round.
2. Drawing from the life.
3. Modelling.
4. Colour Decoration.
5. Water-colour Drawing.
6. Perspective and Biography.
7. Architectural Drawing.

The past year has been one of unusual expense, necessitating the Council to regret to say, the sale of 2000, of their 3000. Exchange Billa, to meet the deficiency in the income; but even under ordinary circumstances it is believed that the income from every source will not yet meet the bare necessary outlay for keeping the Museum open, to say nothing of additions to the collection, lectures, prices, &c., for which no steps can as yet be taken.

As regards the Building Fund, 1,000, are still due to the contractor.

The Council have been in communication with the Commissioners for the Annual International Exhibitions of Art and Industry, and have made suggestions for co-operating with them. The

council say they are at a loss to understand the absence of their president's name on a commission which includes the presidents of the Royal Academy and the Institution of Civil Engineers.

"IMPROVEMENTS."

URNS the "poetic, crouching in fear and dread, Staring, and not knowing where to lay his head, Sees an old man, sometimes cast away from his bed. See you a man whose vigour has passed away? Once he was young, and could labour like any other man, And then he came behind his brother's door, and saw him by, pass him by, death is the doom for him! The City's improving, and there is no room for him.

Under the elm, on the damp turf near Rotten-row, Sleeping his mother and infant—forgot to sow, Pallid and want of dress, though once in silk and lace; But a home turned down, and a family laid out for Husband and wife; but why need we tell the tale? "Crash'd" beneath the train, "on the old rigid iron rail, Pass her on, pass her on, life has but gloom for her! The City's improving, and there is no room for her.

Under the driving sleet, in the square, sleeting on, Creatures are moving, and still to hope clinging on; Watched they look, but from window or balcony nor sympathy reaches not these nights on the roadway now. It comes not through fever and plague that were burst out, But a home turned down, and a family laid out for Pass them by, pass them by, darkness must loom for The City's improving, and there is no room for them.

Palace grounds, public squares, wall'd park and promenade,

Though common to many, must not be a common made:

Knave and watchman have duties, though out of sight,

But to the homeless who have to sleep out of night,

"The house has holes," and the birds have a nesting space,

But God's poor, like Christ, are scarce left a resting-

Out with them, out with them, into the tomb with them:

The City's improving, and there is no room with them.

WATERING STREETS.

ANY well one of your correspondents inform me by a better mode of street watering than by horse and cart, such as hose and jet, &c.?

BOACON STATION.

TENDERING.

SIX—by big to be allowed to confirm the letter on this subject, which appeared in a recent number of the Builder. The unsatisfactory manner of the present method of tendering contracts is well known to all contractors. We may say for specifications, for drawings, and for quantities, and go to much trouble in making out a tender. We may win the lot, and then we find out that if they had vanished into vacuum, we must have been at least beaten in a fair fight; but not to have a line of any kind, and to be told that we have lost the lot, after our trouble and expense, is very unfair. I have, indeed, often written for the information without result. The work is in reply. The system is a nesting altogether.

CONTRACTOR.

NEGLECTED APPRENTICES.

SIX—I am pleased to see that in your last paper, "A Builder's Son," has opened this question. I hope that the subject will not be dropped until some practical remedy has been at least suggested, which will give the young apprentices with the means of improvement; and at the same time encourage the individual towards exertion. In this matter I think that it is the duty of masters to lead a helping hand. It is an old saying that "boys will be boys," and I think that they have a right to be boys, at least occasionally. That being the case, I ask, is it fair or reasonable to expect a boy to work, say for two hours a day, and then for him to feel disposed to study technical details? The fact is, many of them have to rob themselves of needed recreation, by learning the "all-important three R's" in an evening school.

Now, if there be any real desire on the part of master builders to improve their apprentices, the thing is easily done by instituting a little or three weeks' imperfect, or some qualified person. If this were done, much improvement might be effected, and that before technical schools will have become plentiful. I am one who, as an apprentice, had to struggle against

NEGLECT, IGNORANCE, AND POVERTY.

MANAGEMENT OF THE BRITISH MUSEUM.

SIX—I am pleased to see the management of the British Museum discussed in the Builder, and wish to give my testimony, the result of more than twenty years' experience, on certain points, some of which have been debated at different times,—I am sorry to add, with little effect.

The most important matter is the seven days' dead lock every four months. In my case, and doubtless in many others, the result of more than twenty years' experience, on certain points, some of which have been debated at different times,—I am sorry to add, with little effect.

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who do not find themselves often overcome by the inclination to sleep, caused by the excessive impurity of the air. Some constitutions are affected by the condition of the air much more than others, and none to a most painful degree.

A printed catalogue of books of reference in the reading-room, and a catalogue of prices of the books, of course, inevitable; but, I think, an interval of ten years is the extreme limit of time which should be allowed to elapse before a revision is printed. The volume of the catalogue at present in use in the reading-room is illustrated with an unsightly, dirty, troublesome mass of MS. corrections.

Lastly, the school-room element is much too strong in the reading-room. If the present rate of increase in the number of readers continues, there are more readers than will soon be necessary.

J. L. C.

ARCHITECTS' ACTIONS.

SIX—Under the above head, the Builder last week mentioned a Chancery suit between Mr. C. Richardson and Mr. Whistman, as being "decided in Mr. Richardson's favour, after a very short duration." At this conveyance, although no doubt unintentionally, a wrong impression, you will, I trust, allow me also in your next number to state what took place.

Mr. Richardson disputed his agreement with me, and on this being ascertained, the only question before the court was, whether any "credit had arisen." The sale of the building will ascertain this, and if there be a profit, the plaintiff will receive a percentage of it. I am, of course, in a position to have the case decided in my favour, but I have every reason to be satisfied with the decree, and may wish truth to say to the plaintiff, "Heads I win, tails you lose."

THE DEFENDANT.

THE STALYBRIDGE PUBLIC BATHS.

THE public baths, built at a cost of 6,000, and presented to the inhabitants of Stalybridge by Mr. and Mrs. Robert Platt of Danby Hall, are opened: the gift was formally accepted by the Mayor and Corporation of the borough. The baths stand at the east end of Church-street, and have been erected by Mr. Storrs, of Stalybridge, from designs prepared by Messrs. Pail & Robinson, architects, of Manchester. The swimming-baths, Turkish baths, dressing-rooms, and the building also includes a residence for the bath superintendent. There are two swimming-baths, one of which is not yet roofed. The covered swimming-bath has a water area of 80 ft. by 25 ft., and the building itself is 70 ft. by 40 ft. Inside measurement. The open bath has a water area of 82 ft. and 38 ft. Four semicircular trusses on ribbed principals support the roof. The dressing-rooms, which are arranged along the sides of the baths, have been admirably fitted up and furnished. Galleries are erected over the swimming-baths for the use of spectators during swimming matches. The water supply is directed from the town's mains, through a 3-in. meter, which will accurately register the quantity used. All the heating powers are furnished by a powerful steam boiler which is placed in the rear of the main building.

CAMBERWELL CHARITY ESTATES COMPETITION.

A CORRESPONDENT, Mr. Dawsey, states that the design sent in by the local surveyor to the charity has been pronounced the best, and possibly is, but complains that he had access to materials shut up from other competitors. He submits that the Vestry should either have employed the trustees' surveyor, or intimated to him that he could not be permitted to enter the competition, and call upon the vestry to refer the matter to an architect.

THE DRAINAGE OF TOWNS.

By the existing combined system of house and surface drainage, the pernicious gases which are engendered in the general network of house drains and sewers, escape continuously through the various inlets into the houses and streets all over the town. In this manner the entire atmosphere at and near the surface of the ground becomes polluted; and, as the inhabitants constantly live in and breathe this atmosphere, a depressed state of health and a high death-rate are the inevitable results.

Having regard, therefore, to the question of how best to maintain the purity of the atmosphere of towns, it is to be hoped that the present sanitary commission will extend its inquiry into the matter in principle, of town drains, of house drainage, and the rainfall or surface drainage, should be carried away by one set of drains and sewers, or by two separate sets, namely, one for the house drainage, and the other for the surface drainage. In other words, is the atmosphere of towns as pure, or is the health of towns as perfect,

by discharging the combined house and surface drainage by one system of drains and sewers, as it would be were both kinds of drainage kept distinct, and discharged by two separate systems? This question, which goes to the very root of the health of towns, has never been inquired into, or considered by previous sanitary commissions.

As a system of main pipes of iron laid under the streets, with branch pipes of iron or lead, laid from the mains into the houses, supplies the houses with water, why cannot a similar system of iron piping, only larger, with trapped inlets at the kitchen and sanitary stoves, and waterclosets, and properly-arranged ventilating pipes carried above the house-tops, in connexion with the chimney-stacks, be laid so as to take the house drainage clean away into the country for distribution on the land, by irrigation or otherwise? The soil would be thoroughly drained and kept dry, and the rainfall, or surface drainage, would be conveyed away, by separate permeable house-drains and sewers connected with the natural water-courses and rivers. This plan is eminently practicable; and, if properly arranged and constructed, would work perfectly under good management.

After all the improvements that have been effected in drainage during the last twenty years, its condition is such even now, that were it to be uncovered and exposed to public view, it would not be allowed to remain as it is for another day without the inauguration of an entirely new system. But as the eye of the public does not see it, its heart does not grieve about it, and so the vile net-work of abomination under the surface will be suffered to go on poisoning the stratum of air in which we live and breathe as it has hitherto done. In the case of polluted water, which is not only uncovered and seen, the public are active enough, but in the case of reeking drains and sewers, which are covered and unseen, the public are passive from ignorance of their true condition.

Having had as much practical experience in town drainage as most men, I unhesitatingly declare that the present system is radically wrong; that no improvement in the form and construction of the drains and sewers, and no increased water supply, will thoroughly remedy it; and that the separate system must ultimately be adopted. By its adoption the many evils consequent upon that which is now in vogue would cease, the atmosphere would be purer, the populations would be healthier, and the death-rate would be lower.

JOHN PHILLIPS.

CHURCH-BUILDING NEWS.

Saltash (Cornwall).—St. Nicholas's Chapel has been restored and re-opened. In commencing the work the whole of the flooring, except the south transept, was removed and excavated to a depth of two feet. Any vestals that were reached at this depth were filled in and covered with stone, and the whole was then covered with a layer of concrete. The aisles are laid with Maw's tiles on the concrete, and the flooring of the pews is of wood, raised a step above the aisles, and with a space of 15 in. between it and the concrete. The old high-backed pews have been replaced by open seats of pitch pine, varnished. The walls have been replastered. An arch in the north aisle, covered with plaster, has been cleaned off, and the Polyphant stone exposed. The windows have been put in a state of repair, and have been reglazed with cathedral glass. Two new windows, with Portland stone mullions, the gift of the late incumbent, Mr. Hawks, have been erected in the south side, and a small plain Norman window of Polyphant stone, discovered in the south side of the chancel, has been opened out and filled with the restoration by Mr. W. Littleton, in memory of a brother. The ceiling has been replastered between the ribs, which have been painted blue. A new reredos has been erected in Bath stone and marble. The carving has been executed by Mr. H. Hums, of Exeter. Messrs. Ambrose & Bosell, of Plymouth, have been the painters, and Messrs. Atkinson, and Mr. Shaddock, Saltash, the contractors.

Burham.—At an influential meeting of the parishioners resolutions have been passed for the repair and improvement of the parish church, by partial repaving and rearrangement of pews, supplying new windows, &c.; the meeting to be held on the 11th inst. At the meeting, the meeting pledging itself to repay by instalments. A committee has been appointed to carry out the object of the meeting.

Nottingham.—A new mission chapel has been opened at Kensington, near Nottingham. It is capable of seating nearly 300 persons, a school-room in the rear being so arranged as to admit of its being thrown open to the chapel when required. The chapel is brick built, with stone dressings. The windows are narrow and semi-circular-headed, excepting that in the upper part of the principal front, which is a cusped rose-window. The builders were Messrs. Wasp & Son, of Ilkerton; and the architect, Mr. Tait, of Leicester.

Wokingham.—St. Mary's Church has been reopened after restoration. The old plaster has been removed, and the oaken timbers of the open roof restored to view. Where the walls were in a state of disrepair they have been made perfect; the windows are now in their original condition; the old organ-loft has been taken down, and in its place room has been provided for the parish children. The western arch has been enlarged, and the rails of the Clayton monument set back some feet so as to afford more room. All the old high-backed pews have been removed, and in their places are open oak benches, with a stone pulpit. In harmony with the rest of the building, has been erected. A new window, by Messrs. Clayton & Bell, of London, has been put up in the chancel. The restoration was done under Mr. Pearson, of London, architect; and Mr. Carruthers, of Basingstoke, carried out the work, at a cost of £1,740. In April, 1869, restoring the church, the Rev. F. C. Chawner, being at the expense of the latter work.

Lichfield.—The "Lonsdale" Memorial Church, or parish church of St. Mary, Lichfield, has been re-opened. The death of Bishop Lonsdale, who died in 1840, has been the occasion of the proposed repair, the suggestion was made for the rebuilding of the nave and chancel as a tribute to his memory, and as the sum of £4,000 was offered in great part by his son, the present vicar (the Rev. Canon Lonsdale), the suggestion was adopted, and the old church was closed in April, 1868, previously to its demolition. The design of Mr. James Fowler, of Louth, a native of Lichfield, was selected from a numerous competition. The style is Gothic, of the Geometric period. The height of the nave,—viz., 60 ft.,—is a feature; its length is 75 ft., by 28 ft. in breadth. It is an arcade of four bays, with eight two-light traceried clerestory windows on each side. The aisles are 90 ft. by 19 ft., and 21 ft. in plate, finished on the exterior with a moulded line of a parapet and hooded buttresses. At the east end of the chancel and aisles the buttresses are carried up, forming solid spinacles. The chancel is 30 ft. by 24 ft., and 55 ft. high. By opening out the tower arch and thickening the wall, an effect from the east end of the church has been produced. Owing to the insecure state of the tower, considerable expense has been incurred in bracing and raising the bells, and restoring the interior. Accommodation is now provided for nearly 1,000 persons, and the total cost of the rebuilding is from £8,000 to £9,000.

Lulworth.—A new church has been consecrated at West Lulworth. The foundation stone was laid about twelve months ago by Lady Saltash Bodin, and the building has been erected under the superintendence of Mr. G. R. Crickmay, of Weymouth, architect, the original plans having been prepared by the late Mr. John Hicks, of Dorchester. The work was begun and carried out, according to Mr. Crickmay's detailed drawings, by Messrs. Wallinger & Son, of Dorchester, builders. The old church was in a very dilapidated condition, and its satisfactory restoration was pronounced to be impossible. The new site is on open ground, about three-quarters of a mile to the west of the present churchyard. The plan comprises a nave, chancel, north aisle, vestry, and tower, the latter standing in the westermanet bay on the south side, and its base forming a porch to the chancel entrance. The whole of the design is carried out excepting the two upper stages of the tower. The style is Geometrical. The carved, moulded, and highly decorated sections of the stonework generally are of Bath freestone, the remainder being that of the neighbourhood. The roofs of the nave and aisles are open-timbered, moulded, and varnished. The seats are of open construction, and slightly sloped. The chancel roof is of less open construction than those of the nave and aisles. It is horizontal in shape, the angles being marked by moulded ribs. The sacramentum floor is laid with encaustic tiles, the steps and footpace being of polished Parbeck marble.

Morden.—The rebuilding of the old church of East Morden has been commenced, the corner stone of the new structure being laid by Mr. J. S. W. S. Erie-Drax, M.P. for Wareham. The old edifice was fast falling into ruins. Miss Drax has undertaken the reconstruction at a cost of £2,000. The reconstruction was undertaken by Mr. Joseph Seller, builder, who has already carried out some works for Mr. Drax. Mr. Nichols is foreman of the works. In the old chancel was an ancient stone monument to the Erie family, the ancestors of the present squire. This monument has been removed, and the space forming it are being preserved in a large window case and placed in a building near the site. In making the excavations the workmen discovered a couple of carved tombs of Parbeck marble, but bearing no date. These were under the foundation of the porch, and it is thought that on the same site there stood a church even before the old building now raised to the ground. Some mural inscriptions, stone arches carved, &c., were also found. While the former building would accommodate 400 persons, the new one is to contain 600 seats. The tower will have, as before, four bells. The building will be of sandstone, and Ham-hill and Tisbury stone, the colours of which,—dark, red, yellow, and whitish,—form a contrast. The style of architecture will be Gothic. There are to be a nave, two side aisles, supported by pillars, and a chancel with a rostrum at the east end. A chamber for heating apparatus is also to be provided. Including the tower, the building will stand on an area of about 100 ft. by 40 ft. The dimensions of the nave will be about 70 ft. by 20 ft.; the chancel will be 30 ft. by 20 ft., and each of the aisles 40 ft. by 10 ft. The south aisle and chancel will be a small gallery for the organ and choir. There is to be an east window of stained glass, and the other windows will be filled in with cathedral glass. The pews will be high ones. The flooring of the chancel and the aisles will be of Milton's encaustic tiles.

Books Received.

Gibbs's Studies for Art Designers and Manufacturers.—J. A. Remondino, Oxford, 1870. When this work was commenced, the author, Mr. John Gibbs, proposed to publish it in parts, and we gave some particulars when the first was issued; a desire, however, was expressed, it seems, that it should be published as a complete work as one, and this has been complied with, by the production of thirty-one large plates and some introductory remarks. The author holds an opinion which is not new in these pages, that our own Romanesque affords an excellent basis for all future architectural and decorative development. He urges that the historical and archaeological associations of this style, which has several co-equals, in beautiful correspondence, in France, Germany, and Italy, may be studied with great advantage, and should be so studied with other styles; and that a complete knowledge of the laws and rules of proportion, harmony, and fitness should ever be the companions of the architect or designing genius. With such knowledge and taste much more may be achieved in architecture and ornament than copyists can have any idea of, and he would be so conservative as any of the best of the reproducers did he not hope and believe in the development of the style by the hand of the artist, and the preservation of the original mind will not only grasp all that is lovely, and strong, and enduring, that can consistently be gathered from all the fields of art, past and present, but he will call to his aid many of the natural objects which grow and blossom in our fields and gardens, and, in other lands, too,—the trees, the beautiful, true, and the lasting may be brought together proportioned into the majesty of order, the dignity of usefulness, and the harmony of repose.

"The study of decorative art," says Mr. Gibbs, "is too much neglected by most architects, and is consequently seldom brought to the notice of the public. It is the late idea of the designer. Every architectural pupil should study decorative art, as much as possible he should be a student in his progress, and have a practical knowledge of every trade dependent upon it. The author desires to urge the study of decorative art upon all those students of architecture who are likely to come to account of their natural abilities and energies, for they only will maintain the principles of high art, and originate new forms and styles. They will be enabled to make progress thus, and certainly advantageous in other respects. The love and power of design are the highest of the human mind, and are more than ever exemplified by the thousands of amateurs who practise it. To talk learnedly

of art; to draw, paint, execute sculpture and carving, wood tapestry, and much else, even to the using of the jack-plane and the laying of tiles, are things great amongst the many instructive and interesting pursuits so extensively practised by many of the sons and daughters of England, yet only for the pleasure they yield. And the more the principles of design are secluded by society generally, so much the more will our public and private buildings become works of high art.

Some of our best buildings, it is quite true, have been disgraced by impure and tasteless and badly-executed decorations, simply because in these instances the study of decorative art has been neglected.

The designs before us include capitals, chimney-pieces, foliages, ornamental bands, divans, panels, wall decorations, and a great number of other pertinent of a supposed building, designed to show the applicability of the Romanesque style to modern purposes. They are boldly and skilfully drawn, Mr. Gibbs being an excellent draughtsman, and will make capital copies for schools of design and similar establishments. Beyond this, however, as decorative designs they will be found to afford many very valuable hints to art workmen. We shall hope to find that the author has been repaid for his large outlay of time, thought, and money.

A Description of the Roman Tesselated Pavement found in Bucklebury; with Observations on Analogous Discoveries. By JOHN EDWARD PRICE, Director of Evening Meetings of the London and Middlesex Archaeological Society. We are indebted to the Library Committee of the Corporation of London for this very valuable contribution to the history of Roman London. Mr. Price, with pains and skill, has brought together a very large amount of information, not alone as to the pavement in question, the discovery of which we noted at the time, but concerning previous discoveries of a similar kind—Waltham and London. The volume is illustrated with chromo-lithographs, on a large scale, of the Bucklebury pavement, and numerous woodcuts. The writer acknowledges his obligations to Dr. W. Sedgwick Sanders, the chairman of the Library Committee, to whose energetic action the success which attended the efforts to preserve the pavement is mainly due.

Index to Vols. II. and VIII. of the Series of Records known as the Remembrances; preserved among the Archives of the City of London. Prepared by the authority of the Corporation of London. HERE we have another good result of the intelligent liberality of the Corporation of London. The series of books known as the "Remembrances" consist of nine volumes, embracing period from 1550 to 1664, and include copies of correspondence on matters of interest. Thus, under the head of BUILDINGS, we get—

* No. 17. Letter from the Lords of the Council to the Lord Mayor, to prevent the erecting and overreaching of small tenements within the City, and for the aldermen and their deputies in the various wards to make search, and in cases of overreaching to remove the inmates, according to the statute lately passed for that purpose. 4th October, 1563.

No. 190. Letter from the Lords of the Council to the Lord Mayor and Aldermen, requiring them to put into execution her Majesty's late proclamation against the erection of new buildings, and divided revenues, and for committing to prison all persons found transgressing the said proclamation. 11th July, 1602.

No. 201. Letter from the Lord Mayor to the Lords of the Council, with a return as ordered by them, of the new buildings lately erected and now being erected in the City and suburbs, contrary to the order of the Lords of the Star Chamber. 25th March, 1616.

No. 354. Letter from the King (James I.) to the Lord Mayor and Aldermen, commanding them to see the care bestowed upon the walls of Moorfields, the re-building of Aldgate, and the reparation of diverse churches of the City, also calling their attention to the decay of the Chapel of St. Paul's Cathedral, and offering the sum of 500*l.* as a free gift towards the works, if they will take them in hand; and further appointing a commission to inquire into the expenditure of the benevolence given towards the restoration of the cathedral. 24th July (in the first year of his reign) 1603.

We hope that the Corporation will soon find it convenient to direct Mr. Overall, the Librarian, to proceed with the work he, in conjunction with Mr. H. C. Overall, has so well begun.

Miscellaneous.

Distress amongst the Working Classes. Mr. M. C. Torrens, in the II-me of Commons, has given notice that on the 17th of June he will move a resolution that the continued want of employment amongst the working classes be regarded as a national calamity, and that the Government be authorised to employ labour in many of the great towns of England calls for the consideration of the House, with a view to devise the best means for remedying the same without delay.

Communication with the Continent.

The Committee of the House of Commons, on group 2 of Railway Bills, Mr. Cross in the chair, has given his decision upon a Bill which has been looked to with much interest. It is called the International Communication Bill, and contains Mr. Fowler's scheme for establishing a service of railway steam-vessels between Dover and Audreslees, a short distance from Boulogne. Both at Dover and at Audreslees harbours for the accommodation of the vessels, which will resemble floating castles, are proposed to be built. The end of a short line connecting both harbours with the railway would form a hydraulic lock, by means of which a train of 12 carriages could be run on the upper, and 13 on the lower deck of the vessel, which would be 420 ft. long, and 1,600 horse-power. Thus passengers booking at Paris or London could accomplish the whole journey without leaving the carriage. It was stated in course of the evidence that the Emperor of the French was favourable to the project. The committee has decided that the preamble of the Bill has been proved. The operation of the Act is to be restricted until the Emperor of the French has given his assent to the construction of the works, and nothing is to be done under the Act until the whole of the capital is subscribed and half paid up.

Proposed New Infirmary for Leeds.

At a recent meeting of the local guardians, a committee's report on the best system of providing increased accommodation for the sick at the workhouse infirmary was read. It recommended that a new hospital or infirmary shall be built on the pavilion principle, with accommodation for 240 patients, not less than 100 inmates in each pavilion; that the wards be about 120 ft. long, with movable partition in the centre not less than 22 ft. wide and 15 ft. high, and that not less than 120 cubic feet of space be allowed for each bed; that the windows be constructed on the plan of improved means of ventilation; and that the airing grounds between the pavilions be not less than 100 ft.; that sun-lights be introduced in the various dormitories; that architects submit the most approved plan for ventilation and warming the wards; and so on. The report was adopted, and advertisement was to be inserted in the local papers, asking competing architects to plan, and offering two premiums of 50*l.* and 30*l.*; the plans to be delivered or before 28th June.

The Use of Serpentine for Decorative Purposes.

A serpentine font has just been manufactured by Mr. J. Murphy, of the Serpentine Works, Penzance, and fixed in All Saints' Church, Landport, Yorks. As described by the *Illustrated Times*, the font is in the Ionic style. The bowl is octagonal, 2 ft. 1 in. in diameter, and stands on an octagonal plinth and five pillars. The whole is placed on an octagonal white Portland-stone plinth, 3 ft. in diameter. The serpentine has been well selected, and is a beautiful specimen of the Lizard stone. This font has been erected by the members of the congregation as a memorial of Mrs. Churchill, the wife of the Rev. C. B. Churchill, rector of the parish. Mrs. Churchill had often expressed a wish to see a font of this kind placed in the church at Landport, and the congregation to be erected gracefully, and the monument after her death, as a memorial of herself. The Portland plinth was given by Mr. Leather, the contractor for the new docks, Portsmouth.

Oxford Architectural Society.

The second excursion for the season of this society took place on Saturday, when the members left Oxford by the Great Western Railway for Banbury, where they arrived at a quarter to three. After reaching Banbury the party walked to Broughton Castle, which was kindly shown open to them by Lord Syso and Sale. The party assembled on the bridge. Mr. J. H. Parker, F.S.A., called attention to the various points of interest at the castle. The next thing in the programme was a walk to Bloeham, where the party were very kindly received by the vicar, the Rev. J. Hodgson, and Mr. Hodgson said that the restoration of the interior of the church cost 6,300*l.* He read a paper on the architecture of the church. At its close the party were invited to the vicarage and partook of refreshments. There was a break in the programme at Banbury, and the party, after having a look at the supposed Roman amphitheatre called Bear-garden, they returned to Oxford by the eight o'clock train, having spent a very pleasant day.

Earthwork and other Pre-Historic Remains on the Malvern Hills.

A few weeks ago the Worcester Archaeological Society were astonished at an announcement made to them by Mr. Lines, one of its members, of an extraordinary discovery of traces of ancient habitations on an extensive scale on the slopes of the Herefordshire Beacon, and also in connection with the smaller camps on Midsummer Hill and Hollybush Hill. An exploratory visit has accordingly been made to the new field of research; and Mr. Lines has since issued a descriptive and theoretical paper on the subject at Midsummer Hill, where he pointed out the peculiar character of the ancient camp on that hill, its convoluted entrance, and the honey-combed depressions of the whole crest, the sides being worked into terraces, and concentric rings or but circles being visible on the east side, overlooking Hollybush Hill. Mr. Lines pointed out an altar in peculiar relationship to certain triangular tanks, which reminded him of Hindu religious observances, and the water triangle of ancient symbolism. An artificial cave in connection with the remains was also visited, and what he regarded as a tumulus or cemetery; urging its excavation, with permission of the Lord of the Manor, Earl Spencer; who, he thought, would feel as deeply interested in these remains as any member of the club could be.

Zinc Poisoning.—Of the dangers of lead-

poisoning and copper-poisoning from the improper use, in various ways, of vessels made of these two metals, we have before us a most interesting and instructive paper, by Mr. E. Kinch, of the Royal Agricultural College, Cirencester, writes to the *Food Journal* that a sample of elder-wine recently came under his notice, which had been found to produce serious vomiting when partaken to the extent of about six or eight ounces. The maker had used a clean galvanised or sined iron vessel, and a wooden spoon to stir the ingredients. On examination the wine proved to contain zinc, dissolved by the oxalic acid of the elder-berries, in quantity nearly equal to nine grains of oxalic acid of zinc per wine glass. It is well known that zinc, in the form of lactate of zinc; and a foreign chemist has lately called attention to the fact, that water kept in zinc reservoirs, or collected from zinc roofs, is invariably contaminated with the metal, and therefore should not be used for domestic purposes.

An Electrified Island.—The little island

of St. Pierre Miquelon boasts of two telegraph stations. One of these is a station of the American Company, which works in connection with the Anglo-American Company's lines, receiving messages from Newfoundland and sending them on to Sydney. The other station, which is worked by the French Transatlantic Company, is finished with extremely delicate receiving instruments, which were found to be seriously affected by earth currents. It was found, says *Nature*, that part of the so-called earth-currents had been due to the signals sent by the American Company into their own lines, for the messages sent by the rival company were clearly indicated. The wires were not even in close vicinity. The stations are several hundred yards apart, yet messages sent to one were distinctly read at the other, through the earth. The fact is, the little island was thoroughly electrified, and could no longer keep its secrets.

The American Rubber Stamp.—An

American, named Stetson, has invented an elastic stamp made of india-rubber, which is said to be an improvement on metallic or other stamps for certain purposes. The design is formed on the india-rubber, and the stamp is useful in cases where metallic stamps would be useless. For example, it can accommodate itself to any irregular form or uneven surface, and can even stamp "round a corner." In proportion to its chastity and simplicity of structure it does not resist the impressed surface, and produces soft and delicate impressions. The cost is small, and the durability great.

Law of Conduct.—A course of four lectures

"On the Laws of Conduct in Industrial Life, and on the Method of Imparting Instruction therein in our Primary Schools, especially addressed to Teachers," are in course of delivery by Mr. William Ellis at the Lecture Theatre of the Royal School of Mines, Jernyn-street. The next will be given on Monday, the 30th of May; others will follow on the 13th and 20th of June, at 8 o'clock. Admission free.

The New National Gallery that is or is not to be.—On going into Committee of Supply in the Commons, Mr. Barendse Hope called attention to the delay which had occurred in proceeding with the building of the New National Gallery, and moved for papers and other information on the subject down to the present day. Mr. Ayrton promised the production of papers; but from his remarks, and those of Mr. Gladstone, it appears that the Government have no immediate intention of doing anything further in the matter, giving as a reason the great expense which other more pressing public buildings are occasioning, and will content with special reference being made to the proposed accommodation for the Natural History collection of the British Museum; no promise or information as to procedure in which, however, was made either. Mr. Ayrton included the Law Courts among public buildings which were to be gone on with at the cost of the Government or the country.

Cost of Metropolitan District Railway.—In evidence before a Parliamentary Committee, Mr. Robert Baxter, of the firm of Baxter, Rose & Norton, solicitors to the company, said the company's line had cost:—The first portion, at South Kensington, 361,000*l.*, of which the land represented 108,000*l.*, expenses, 61,000*l.*, and works, 207,000*l.*; the second portion, from High-street, Kensington, to Pelham-street, 683,000*l.*, and from thence to Westminster, 2,696,000*l.*, from Westminster to Bread-street the cost was 986,000*l.*, of which 556,000*l.* represented land, and 430,000*l.* works; and from Bread-street to Queen-street, 305,000*l.*, of which 210,000*l.* represented land, and 95,000*l.* works. The whole cost, took originally 750,000*l.*, and secondly 500,000*l.*, together about a million and a quarter of the stock. Was not acquainted with their present holding, but should guess it roughly at about a million.

An Oversight in Compensation.—The *Purloined Critic* says,—"A short time ago, Kensington was promised a new police-station. A fine site was obtained opposite the principal line of buildings on the improvement lately made in the High-street. Premises at the corner of Church-court, and abutting on the wall of the churchyard, were bought for 3,000*l.*, and a similar amount was paid by the police authorities for an adjoining house. Now occurred a 'hitch.' The freeholder of the second piece of property came down with a claim for the extinction of his interest, the awkward blunder having been made of treating only with the lessee. A dismissal of the gentleman through whom the thing came to so absurd a pass is believed to have visited upon him severely the consequences of his short-sightedness.

Hurstpierpoint Town Drainage.—The following are the tenders received for constructing the sewerage works, reconstructing the bridge crossing the Cockfield-road, near the old Toll House, and other works, for draining the town, exclusive (it is believed) of the sewage tanks, &c.:—Cole, Forest Hill, 3,581*l.* 5*s.* 7*d.*; G. Harris, Shalford, Essex, 3,169*l.*; Crockett, St. Pancras, 3,155*l.*; 8*ymonds*, Redhill, 3,086*l.*; Ford, Wolverhampton, 3,022*l.* 7*s.* 11*d.*; Choteman & Co., Brighton, 3,020*l.*; Blackmore, Brighton, 2,999*l.*; Bloomfield, Tottenham, 2,995*l.*; Hayward, Croydon, 2,820*l.*; Goodrich, Southwark, 2,755*l.*; Young, Battersea, 2,750*l.*; Jackson & Crane, Southwark, 2,747*l.*; Woodcock, London, 2,644*l.*; Mr. Woodcock's tender, being the lowest, was accepted. Mr. B. S. Naun, of Brighton, is the surveyor; and Mr. Edwin Anscombe, of Hurst, the clerk of the works.

Death of Mr. D. O. Hill, M.S.A.—This well-known artist, who has been long in failing health, died at Edinburgh on Tuesday. Mr. Hill was born in 1802, at Perth, where his father was a bookseller. In 1828 he exhibited in Edinburgh, three pictures of Scottish scenery, which evinced artistic skill of high promise. In 1830 he was appointed secretary of the new Royal Scottish Academy. He was the first to suggest the formation, and aided in devising the constitution of the Royal Association for the Promotion of the Fine Arts in Scotland.

The Floating Dock "Bermuda."—Intelligence has been received of this dock having been safely floated into the canal or basin at the Royal Naval dockyard, at Ireland Island. Preparations were being made for docking in it her Majesty's ship the *Racon*.

Portrait of the Prince and Princess of Piedmont.—At the establishment of Messrs. Henry Graves & Co., in Pall-mall, we have seen a very interesting picture, by Mr. Desanges, containing life-size portraits of their Royal Highnesses Umberto and Margherita, Prince and Princess of Piedmont, and their only son, the Prince of Naples, which is about to be engraved. We bear, with something besides astonishment, that space for this picture was refused by the Council of the Royal Academy. The illustrious personages represented will be King and Queen of Italy, and can't rays upon the protuberance of the subject, the likenesses being admittedly good, should have obtained for it a place. We have no hesitation, however, in saying that as a picture it is a work of merit, far superior to many that are hung, and that the painter of it has been very badly treated,—not for the first time. The picture is intended for the town-hall of Naples.

Monumental.—According to the *Kensington News*, the memorial of the late Rev. William Harcourt, M.A., vicar of All Saints', Prince's-gate, will take the form of a monumental brass at All Saints' Church, and a Harcourt prize for Literature at the University of Cambridge.—Mr. Nelson, the sculptor, of London, has been commissioned to execute the statue of the late Lord Stanley of Alderley, to be erected in Alderley Church, Cheshire.—The Duke of Devonshire, the Chancellor of the University of Cambridge, has notified that the statue of the late Prince Consort, as chancellor of the university, on which Mr. Foley has been for some years engaged, being now completed, his grace, acting on behalf of the subscribers, makes a formal offer of the memorial to the senate.

Plaster of Paris for Modelling.—When 2 to 4 per cent. of finely-pulverised albaea rosi (marsh mallow) is mixed with plaster of Paris, it retards the hardening, which begins only after an hour's time. When dry, it may be filed, cut, or turned, and thus become of use in making domestic-stoves, dies, brooches, snuff-boxes, and so on. Eight per cent. retards the hardening for a longer time, but increases the tenacity of the mass. The latter may be rolled out on a thin plate in thin sheets, which when dry, or in drying, may be easily detached from the glass, and take on a polish readily by rubbing them. This material, incorporated with paints, and properly kneaded, gives imitations of marble, can be coloured when dry, and be made waterproof by polishing and varnishing.

Archaeological Discovery.—Mr. J. R. Mortimer, of Driffield, has just completed the examination of a tumulus-like mound, situated about one-sixth of a mile north-west of the village of Finbur, on the Yorkshire Wolds. The discovery is of peculiar interest, being only the third of the same curious platformed nature yet recorded. The first was made at Halseporthe, in the Wold Valley, a few years ago; and the second, closely allied to Mr. Mortimer's, was made at Swinton. The mound just examined was known as the "Mill Hill" by the oldest inhabitant. Mr. Mortimer suggests the desirability of a proper record and investigation of places which bear the traditional name of "mill hill," "moot hill," or "cote hill," which are not uncommon. There is a Mill Hill in Middlesex.

The Colour most Striking to the Eye.—Experiments made to ascertain what colours are most quickly and easily perceived by the eye, seem to show, according to the *Photographic News*, that bright yellow is the colour most easily distinguished, and it is therefore suggested for railway signals. It is remarkable that yellow yields dark shades in photographs: thus, a yellow-haired person is apt to have black or dark hair, and yellow dresses never turn out light.

Society for the Encouragement of the Fine Arts.—Some of our readers may be glad to know beforehand, that at the next meeting of the Society, June 2nd, Dr. W. Woodcock will read a paper "On the Tragic Elements in the Drama of Fiction." On that occasion, appropriately, Dr. Doraun will preside.

Free Libraries Act, Derby.—At a public meeting of the ratepayers of the borough of Derby, held in the Guildhall, and largely attended, it has been unanimously resolved to adopt the Free Libraries Act.

Civil Engineers' Conversations.—The conversations of the President of the Institution of Civil Engineers will take place on the 31st inst.

Glass and the Sun.—M. Bontemps, the managing director of the glass works at Choisy-le-Roi, states that the best and whitest glass made at St. Gobain turns to a distinct yellow after three months' exposure to the sun. Crystal glass, made with carbonate of potash, litharge, and silica, was not at all affected (the other varieties referred to contain carbonate of soda); English plate-glass, from the British Plate Glass Company, of a distinctly azure blue tinge, also remains unaffected. The colouration, which begins with yellow, and gradually turns to violet, is ascribed to the sun's shining effects of the sun's rays upon the protuberance of iron and manganese contained in glass. It is well known, however, that the association of sodium with yellow colours is frequent.

England's Character on the Wane.—A sentence in the last report of the chief engineer to the Great Western Railway of Canada is so significant that we quote it without further comment:—"Very serious defects pertain to a large proportion of all the rails imported from England of late years, and the consequence is that all the leading railways are now either introducing steel rails, or they are purchasing American rails manufactured from a superior quality of native iron."

Demolition for the New City Library.—The destruction of several large buildings on the west side of Basinghall-street, closely contiguous to the Bankruptcy Court, will shortly give opportunity for the foundations to be put in, and the new and extensive buildings commenced. The erections will be fitted for the joint purposes of a library and museum, with accommodation for readers. 25,000*l.* is the amount decided to be conditionally granted for the purpose out of the City's cash.

Proposed New Street through Leicester-square.—Capt. Grosvenor, M.P., and Mr. W. H. Smith, introduced a petition to the Metropolitan Board of Works last week, praying that body to consider the importance of constructing a new street from Charing-cross to Tottenham-court-road. The proposed new thoroughfare would involve the purchase of Leicester-square, and its gross cost would be about 600,000*l.* The matter was referred to the General Purposes Committee.

Proposed New Church for Wood Greenbury.—Messrs. Elwell, of Wood Green Woods, through whose liberality a new church school-room was recently opened at New Town, now propose the erection of a new church in the same neighbourhood, and offer 3,000*l.*, or 1,000*l.* each, towards the cost of the work. The site proposed is in the upper part of Wood Green, close to the cemetery, with a front entrance from the Walwall-road.

Meltham.—The foundation-stone of the new almshouses at Meltham, in course of erection by Mr. J. Hirst, has been laid by Mr. Hirst, in presence of a large concourse of people, mostly residents in Wilshaw and the neighbourhood. The architect is Mr. Kirk, of Huddersfield.

National Provincial Bank, Birmingham.—With reference to a recent notice of the New National Provincial Bank at Birmingham, in our pages, we are asked to mention that all the safes, doors, strong-rooms, and linings were made by Messrs. Chubb & Son.

The Proposed New Town-hall for Winchester.—A memorial has been drawn up by those opposed to the scheme of the Town Council for a new town-hall, to be presented, when signed, to the Lords of the Treasury, praying them not to sanction the erection.

The Architectural Exhibition.—The conversations held on Tuesday evening last, under the presidency of Mr. Jas. Ferguson, was fairly attended. A military band was present under the direction of Mr. Bradbury.

New Park for Rodderley.—The Bradford town council have decided to accept the offer of Mr. Lister to sell the estate of Mannings Park, valued at 60,000*l.*, for 40,000*l.*, in order to form a second public park for the borough.

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BRICKS, TILES and LATHS.

STAFFORDSHIRE SLATE, BRICKS, TILES, and FINE STONE

TO CONTRACTORS.—The Dublin Port

NO CONTRACTORS.—The Dublin Port and Docks Board is prepared to receive TENDERERS' TAKEN UP and **RECEIVED** for the **ROBEY WALL QUAY** for a length of about 1,100 feet, with works connected therewith. The drawings and specifications may be seen at the Office of the Engineer, **BRIDGES & STONES**, Nos. North Wall, Dublin. Tenderers must submit their bids in sealed envelopes, with the specifications and the payable quantities, can be obtained on payment of two shillings. Tenders, on and after **Tuesday** for **Deepening Basin** and **Reclamation** of the **ROBEY WALL QUAY**, will be received by the Secretary, Dublin Port and Docks Office, Water Quay, Dublin, on or before **WEDNESDAY**, the 25th day of **JUNE**, at 10 o'clock. The Board does not bind itself to accept the lowest or any tender.

F. H. O'DON.

Dublin Port and Docks Office, May 23, 1892.

CITY of ROCHESTER.—To BUILDERS

AND CONTRACTORS—TENDERS are invited by the Corporation of the said City for the ERECTION of a new COAL WHARF at the said City of Rochester, on a piece of ground in the rear of a building to be erected on the site of the old COAL WHARF adjoining the river, to be begun on and after the 19th day of JUNE next, and to be completed on or before the 15th day of JULY next. Plans, specifications, and a copy of the conditions upon application to the architect, Messrs. FLETCHER & HEBERT 7, St. James-street, the said, on payment of a fee of guineas, which shall be returned to the order of the said architect, and which shall be so sent to any Offices, Rochester, free of any post or carriage charges, may be seen on or before the 15th day of JUNE next but not later than FOUR o'clock in the afternoon of that day. Tenders must be duly sealed and endorsed, on or before the 15th day of JUNE next but not later than FOUR o'clock in the afternoon of that day. The Corporation do not bind themselves to accept the lowest offer. Tenders to be sent to the order of
RICHARD FRILL, Town Clerk.
Rochester, 24th MAY, 1878.

BOROUGH of BRADFORD.—NEW TOWN-HALL.—To BUILDER, CONTRACTOR, OTHERS.—EXTENSION OF YARD FOR TENDER, on the Corner of the NEW TOWN-HALL, and will require TENDERS for the Fencing of the Works. Bids of quantities will be ready to be supplied, less charges, on MONDAY, the 13th of JUNE next, and must of course, be accompanied by the following WEDNESDAY, the 15th of JUNE next, at the discretion of Tendering for the whole or any portion of the Work, as requested by those themselves in communication with the Architect, Messrs. LOCKWOOD & SAATCHI, Exchange Buildings, Bristol, and the Clerk of the Works, Messrs. W. & A. GIBBS, 10, Abchurch Lane, London, E.C. 4, and will be delivered at the undermentioned Office on or before the 13th of JUNE next. The Corporation will reserve to themselves the right of accepting the lowest or any other offer, and of not accepting any.

W. GIBBS & CO., Town Clerk.

Corporation Office, Bradford, May 31, 1879.

[illegible]

Odilham, May 18, 1879. Clerk to the Quorum

CEILING FLOWERS, CORNICES, &c.
to great variety.—Balustrades, capitals, short front
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Flender, Portland, Roman's and other Cornices all
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Fittings.

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Let of pattern, with full size
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These Valves are all patterned
both ends to B.S. or to the
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They are made with cast iron

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Also Screw Water Valves,
Gun-metal Pumps.

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WATER MAIN; good second-hand Pipe, about 150 ft.
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Forms Tenons at One operation, Planes, and Cuts Mouldings, up to 9 in. x 12 in. by Self-acting Feed;
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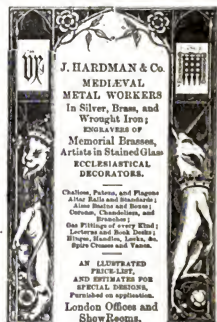
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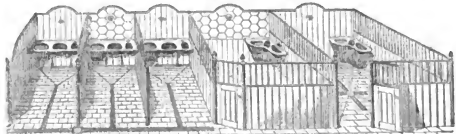
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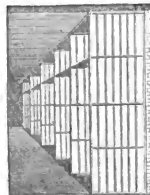
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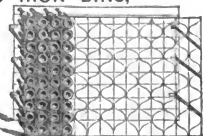
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VOL. XXVIII.—No. 1426.

Salisbury, Sarum, and Surroundings.



H &

UNEY does not flow in very abundantly at present for the restoration of the Lady Chapel at Salisbury, as a memorial of the late bishop. The works, however, are being proceeded with gradually; the Parbeck columns, now all in place, are being mended and polished, some of them being taken down and half renewed, and the result will doubtless be to bring back to its original condition one of the most interesting and elegant portions of the cathedral. At present, the works here and in the choir,—where Wyatt's coarse, ugly canopies of the stalls are being removed, and will give place to something that is sure to be better,—Mr. Scott directing, have enforced the erection of a temporary screen at the east end of the nave, that necessarily destroys the interior effect. Salisbury Cathedral has always seemed to us an over-ornamented building. Talk of it in the same breath with Westminster, Lincoln, Ely, or Canterbury, we will not. It is particularly valuable, its history is so clearly handed down; we have before us an almost newspaperish account of the people who were gathered together by Bishop Poor, on a certain day in the year 1220, to lay corner-stones. We are aware that it was consecrated in 1258; that it cost 27,000*l.* in the money of the day, exclusive of the spire, which was built a hundred years later; and we even know that the first clerk of the works was Elias de Doreham; and that after so serving for twenty years, he was succeeded by one Robertus. The very fact that it was carried out continuously in one style, as its admirers boast, prevents it from competing in interest with a building that has the history of centuries written in its various parts. It is wanting in sculpture, wanting in mind-work; and even the west front, charming as it is in many respects, is full of what would be called faults in a modern front. It is very much a mere screen, to begin with,—a thing of itself, and not the actual outgrowth of the plan and section of the building; the quatrefoil string, so to term it, that runs along the front over the second tier of windows, is greatly too large and coarse for the other parts of the design, while the way in which the arcades are mingled in parts is inartistic and indefensible; nevertheless, it is, as we have said, very charming after all, and especially so the central compartment, with its beautiful triplet. Indeed, when we qualify our praise as we have done, it is only in opposition to those who claim too much. The picture presented by the cathedral to the visitor entering the Close (the closed place) at the north-east is one not easily equalled and not soon forgotten. The pyramidal outline of the group, springing from a well-kept, brilliant sward, the central spire reaching heavenward some 404 feet, is perfect; and, approaching closer, the effect produced by the outline of the two

transepts, and the dignity of their elevation are very striking. The lofty north porch, too, is a very fine feature.

The oneness of the design is the more remarkable, remembering the extent of the building. An ancient local rhyme gives some idea of this extent when it says,—

"As many days as in one year there be,
So many windows in this church you see.
As many marble pillars here appear
As there are hours through the footing year.
As many gates as moons one here do view,
Stränge tale to tell, yet not more strange than true."

On the other side of the cathedral the view would have been much improved if the chapter-house, when it was under repair, had received a high-pointed roof, such as, we find no reason to doubt, originally crowned it, or was intended.

This chapter-house, by the way, is a work of rare merit and interest. The vousoirs of the arch in the vestibule and the spandrels of the arcade below the windows in the chapter-house itself contain the most interesting series of Medieval sculptures anywhere to be found. Those in the vestibule represent figures of the Virtues trampling on the Vices, and are full of life and spirit. The series in the chapter-house sets forth in its own way the history of man from the Creation to the delivery of the Law to Moses. When the chapter-house was restored, a few years ago, under the direction of Mr. Clinton (not Clatterbuck, as accidentally printed in Murray's "Handbook for Wiltshire"), these were also dealt with, and the whole, as well as the arcade and other parts, were discreetly polychromed by Mr. Hudson; a tile floor, stained glass, Parbeck shafts, and colour in the vaulting, making the whole consistent and cheering. It is matter for great regret that much of this colouring is already destroyed, and that much more of it is doomed. A fatality seems to attend all our efforts to re-introduce colour in decoration. It appears, that in order to get a good surface for painting on, coat upon coat of paint was given to the stonework of the arcade, and the result is that this is now separating in a body from the stone. It comes off in such a thickness that it is difficult, without careful examination, to avoid the belief that the painting has been executed on paper or canvas, and that this is now separating from the wall. This is a very serious and regrettable matter, and we earnestly urge the dean and chapter immediately to call together a committee of advice on the subject, who should seek resolutely for some means to arrest the evil.

There is monumental sculpture in the cathedral well worth study, as every one interested in such works knows; notably the effigy of William Longespée, Earl of Salisbury, who had King Henry II. for father, and "fair Rosemond" (*Rosa Mendis*) for mother, and died in 1226, at his castle in Old Sarum, where the cathedral originally was. The effigy, of stone, is full of charming feeling; the basement on which it rests is of wood, and was richly painted, gilt, and silvered. Such vestiges of the decoration as remain should be most carefully preserved. The very respectable verge of the cathedral, when showing to be the monument, was running into the old story of the connexion between the name of the earl and the length of the sword by the side of the effigy, but, seeing that he was being looked at, wisely glided off into "at least it need be said so, but—" and so on. We wonder if he still points out the miniature effigy on the north side of the nave as that of the "Boy Bishop." It is hard to give up an old tradition and something to talk about, but we go fully with Mr. Pileole in repudiating this appropriation. The story is probably well remembered. The choristers were in the habit of annually electing a bishop who sustained the office with mock dignity for three weeks, and the tale told for many years and now of the miniature effigy is, that it represents one of these play-bishops,

who in the thirteenth century died during his brief reign. The tale will not bear examination. Who would go to the expense of a monument for such a purpose? Moreover, miniature effigies, reasonably supposed to indicate that a portion only of the remains (the heart, for example) had been deposited near them, are not uncommon. It might as well be said that the miniature female effigy in the Abbey of Jedd, near Meln, commemorated a little fourteenth-century Queen of the May, and that the well-known cross-legged statuette of a knight in the Church of Horsted Keynes, Essex, represented a crusading Tom Thumb of the Medieval times. It seems a pity that Mr. King, in his "Handbook of the Cathedral" (1861), should have repeated the story of the effigy of the Boy Bishop, as if it were unquestioned.

Glancing at some of the modern memorials, it will be seen that the brass that was put up against the west wall of the north transept, in honour of John Britton,—active, energetic, useful John Britton, the historian of the cathedral,—a brass put up at the cost of certain members of the Institute of Architects, has, like most other modern brasses that we know of, a rusty, wretched appearance, and that the lettering is scarcely readable. It will be desirable in any future works of the kind to avoid "rubication," which, in the course of a few years, usually presents a ridiculous aspect, the coloured letters either staring out all alone, in a ghastly sort of way (while the rest of the inscription is undecipherable), or disappearing altogether, when the remainder of the words has a disposition to allow itself to be read.

If we get out at the west door and look again at the front, we shall see how much work has been recently done there. Mackenzie's admirable drawing of this front in Britton's volume, a drawing so correct that a photograph does not shame it, shows that only eight statues remained in the niches; there are now probably eighty, the work of Mr. Redfern, and which have been put in within the last few years. Looked at from a distance, they arrange themselves in five lines, exclusive of the Saviour "in Majesty" filling a vision in the point of the centre gable. The figures are made to illustrate the *Te Deum*, commencing, "To Thee all angels cry aloud;" "To Thee cherubim and seraphim continually do cry;" and so on. Accordingly, there is a tier of angels, a tier of Old Testament patriarchs and prophets, a tier of apostles, a tier of doctors, virgins, and martyrs; and a set of worthies eminent in the English church.—"The Holy Church throughout all the world doth acknowledge Thee." The authority for this arrangement in this special case must be small, nor do we know that the vision originally contained a figure. Mackenzie's drawing, to which we have referred, shows it filled with a quaterfoil. However, the scheme serves perfectly well as a foundation for devising a series of statues to complete the front, and some of them are remarkably well executed. They can only be regarded as decorative sculpture, and are necessarily valueless from any other point of view; very unlike, for example, the statues in a similar position at Wells, which, while they remain unstamped with, serve to show the state of art in this country at the date of their execution, and to illustrate costume and ornament. Let us express a hope that in carrying out the intention which has been expressed to fill the vacant places at Wells, and repair the existing statues, the latter will simply be repaired and maintained, and that the new figures will be carefully marked as such.

The central niche of the eleven at Salisbury over the central door contains a representation of St. Christopher, with the infant Christ upon his shoulder; so that if the ancient superstition still prevail, that,—

"To him who St. Christopher's figure shall see,
Nor weakness nor failure on that day shall be."

the good people of Salisbury may easily make themselves happy by good assurance every morning of their lives. This west front, we may mention, is later in date than the rest of the body of the church, even if the ball-flower ornament on the pedestals of the statues nearest the ground were sculptured after the front was finished.

The early history of Salisbury and its cathedral cannot be fully grasped without walking out to Old Sarum; but what we have to say of this and of other monuments such as Wilton, and Longford Castle, with their marvellous collections, and the Museum in the city,—must wait for another occasion. Meanwhile, however, let us add a dozen lines on a domestic matter, first enjoying a peep into the cloister-garth, where loving hands for some months have been busy decked with flowers the grave of the late Bishop, and a charming view in the close, made up of ancient houses, dainty gardens, and the old grey archway. On "blithe May-day" when we were there, apple-trees were ablaze with such exquisite bloom as we have not often seen.

The hall of John de Haling, roof-stapler, a well-preserved piece of domestic architecture of the reign of Edward IV., and some other remnants of the old times, may yet be found in Salisbury. The long-standing hotel, the White Hart, with its big columns in front, is now the "White Hart, Limited,"—word of times dire to knowing travellers seeking comfort; a word suggestive of rooms flaring with new paint and paper, without pictures on the walls, a china cup on the mantelpiece, or an old-fashioned chair in the corner to awaken an interest; of extravagant charges, and utter inattention on the part of the overlooker, no longer a "host," but a "manager." We know of more than one party visiting this very White Hart, Limited, each staying two or three days, having private sitting-rooms, hiring carriages, and otherwise spending money, who yet never saw the manager, male or female, during the whole time. In the comfortable old-fashioned hotel,—take, for example, the charming "Penscoe," at Bowley, or "The George," at Northampton, full of knick-knacks from top to bottom,—it is the custom of the landlord or landlady, as the case may be to bring in the first dish at dinner, and a good custom too, and it is pleasant to find in many parts of Germany and elsewhere, the landlady, when the bill has been paid, waiting to see her guests depart, and handing a *bouquet* to Madame, with hopes for a kind word in her favour to friends coming that way. The "managers" in England for hotel companies, "limited," are either too great people or too entirely stupid to adopt any such course of proceeding. If hotel companies wish for satisfactory dividends, they must set to work to educate a race of good managers, and lower their prices, so that the advantages and pleasures of travelling in England may be extended to larger numbers than can now venture upon the attempt to obtain them.

HOMERIC ARCHITECTURE: THE PALACE OF ULYSSES.

THERE is something more than mere archaeological interest in an endeavour to recover some details of the palace of Ulysses,—of its plan especially, from the scattered notices in the *Odyssey*—of the palace that is, as conceived by the poet, and manifestly taken for granted by him as a model familiar to his original auditory. A lively realisation of localities and distributions of space is certainly not so necessary for the enjoyment of this poem as of the *Iliad*. Homer, it is said, and as the Greek poet doubtless referred to a scheme of well-known arrangements, there is no reason to credit him here with even a portion of that marvellous faculty of inventive construction that often disposes us to exclaim—whether descending from circle to circle, or ascending from sphere to sphere—"How great an architect was in Dante lost!"

Still, the great crisis of the poem, at the contest with the suitors, in the 21st and 22nd books, involves so much going in and coming out of, and moving about the palace, that we may do injustice to the simple consistency of the poet, unless

we can place ourselves at that point of view of the field of action that he might fairly expect those who should be interested in his story to occupy. We proceed, as at once to the scenes where the notices that we are chiefly interested in, and the occasions of their interest, lie most closely together. We shall take the liberty for other than mere typographical considerations, to substitute italic equivalents for letters from the Greek text, unless when moved to an exception. It is in the *seventeenth* book, however, that the disguised, indeed metamorphosed into the semblance of a beggar—comes in sight of his home after an absence of twenty years. He is as yet unrevealed even to the loyal servant Eumæus, who by command of Telemachus, at present sole possessor of the secret, conducting him, confident as the much-enduring man may be in his self-control—he has just endured to be spurned vilely by one of his own slaves without retaliation, without a word,—he greets the place in terms calculated to explain away any slightest sign that might escape him of recognising what he is about to see for the first time. He breaks out in admiration: the structures (*dîmata*) are so beautiful not to be those of Ulysses,—easily would they be identified though amidst many others. Their extensiveness is also indicated (v. 266), one set follows on in connected order with another; the court (*aule*) is finished off with wall and coping stones, which, with the double or folding doors make a thoroughly effective enclosure. We have thus the general image of a palace that reminds us—though apart from the town—of the principle of the vast pile of the Strozzi in the midst of fashion-worried Florence, or of an English castellated mansion in Medieval times. Offices and homestead are comprised within a solid external wall, and a main entrance is well closed by a door of corresponding stoutness. It is here at the approach to the portals (xvii, 297) admitting to the enclosure of the *aule*, that the affecting incident occurs of the dog Argos recognising his master with expressive ears and wagging tail, but—too old and weak even to crawl towards him—dying as he greets him again,—again, after the twentieth year. Incidentally this leads to the mention that here, full in front of the entrance—but we are by no means bound to suppose close to it—was the heap of manure from mules and oxen accumulating till it should be carried away by the servants and spread over the vast *temenos*, or domain of Ulysses. (v. 306) Ship is presented to us in Ithaca as a mode of life as mixed up with the primitive and primitive as any and of the chairman of quarter sessions that ever was interested in the question, "How a score of ewes at Stamford fair?"

The situation of the palace, we may note, is away, but not very remote, from the town, whither the suitors habitually repair to the agora, every night to sleep; and, when the view of the sea; for when the suitors have sallied forth from the "megaron out beyond the great wall of the *aule* in front of the portals," and are debating how to notify to their comrades at sea the return to Ithaca of the waylaid Telemachus, one of them turning his head bursts into laughter as he sees their vessel just entering the port, bootless from the murderous expedition (xvii, 343). In the first book we have another description of an arrival at the palace,—Minerva, no less, in disguise, personating a Taphian prince, appears at the *prothyra* (here in the plural), the "entrances," and, before the entrance, of the *Ulysses*, standing on the threshold of the *aule* (*oûkos auleios*, l, 105). Here she finds the suitors in "front of the portals"—the same phrase that is used for the position of Argos—amusing themselves at draughts or dice (*pezon*); they sit on the sides of e'en slaughtered for their reward, and, when the stranger, who is manifestly, when brooding over his discontent, sees the stranger at the doors, makes direct (v. 119, *oûk epipôikos*) for the *prothyron* (singular), to welcome him, conducts him to within the lofty *dome*, seats his spear against a tall column in the vestibule, and, as he is about to enter, (original expression, it has been translated, of the *ante*),—and prepares a hospitable welcome.

While the suitors amuse themselves, the servants are preparing within for the feast, mixing the wine, sponging and placing the tables, and cutting up meat. As Telemachus receives the suitors to proceed to the *prothyron*, they are not to be conceived as entering within an actual vestibule outside the door of *aule*, but merely in the general space in front of it; so, on the later occasion, they are exercising

themselves with the dîanos and throwing the spear on a *fulcon dapedon*, a made or levelled plot, *repêdron*, in front of the *megaron* of Ulysses; and these, called by the herald Medon, they proceed into the *dome* or the *dome* (*xvii*, 175—178) to the feast.

Megaron, it is clear, is used here, as we shall find it occasionally hereafter, in a general sense, like *dome* and *dome* frequently, and the same was the case, called by the herald Medon, in front of it, like that of the dice-playing, "before the doors."

Eumæus, leaving the supposed beggar to follow, enters the building, the *dome*, and proceeds direct to the *megaron*, *oûk epipôikos* (xvii, 325) to the feasting suitors. Ulysses speedily follows, and seats himself on the *axôn* three-headed, the *metior axôn*, within the doors, and leaning against the door-post of cypress-wood that the joiner on a time had skillfully smoothed and set up vertically by the *stathm*, or rule. Here he is seen by Telemachus within, who sends him food, and from hence, at his suggestion, he rises to go to the *frons* in the order.

The wooden—meives—threshold and highly wrought doorway indicate a doorway to a chamber, not to an open court,—to the *megaron* proper, or, as the derivation implies, great chamber, the dining-hall of the men. Thus the *aule* is first entered from its *prothyron* over the *axôn*, and the *frons* in the order, by the *metior axôn*, the *megaron*, or dining-hall.

But it is while Ulysses is seated here that the vile mendicant Irus arrives to abuse and challenge him,—miserable and aged as he seems; and his first greeting is, "Be off from the *prothyron*," the vestibule we have to assume pertaining to the *megaron*, and comprising its threshold. An altercation quickly arises before the lofty doorway, thus rather without than on the inner side (*epandaktis*, xvii, 32) upon the "smoothed threshold." The suitors all rise up and crowd about to foment the fray, encourage the seemingly unwilling Ulysses, and drag the really reluctant Irus (*ic pieron*, v. 63) into the midst, but to which side of the threshold does not at present appear. Ulysses, fearful of being recognised or suspected, determines only to injure his adversary moderately, not kill him outright. Anticipating the pugilistic career of Jackson, he contemns a blow on the right shoulder in order to plant one,—decisive,—on the neck of Irus below the ear, breaking his jaw, and felling him helpless to the ground. The suitors are charmed, as were charmed English peers and princes of a generation now fast dropping away; but Ulysses, taking him by the hand, dragged him "out through the *prothyron* till he came to the *aule* and the doors (*thyra*) of the *aithousa*" (xvii, 101), of which presently; there he set him up leaning against the *erkion* of the *aule* (the external wall of the *aule*), and left him, giving him a stick to keep off dogs and swine, and a moral lesson in humility and modesty to ponder over.

If himself resumes his wallet and his place at the threshold, and the suitors (v. 110) "came in," laughing heartily and applauding his victory.

It would seem to be clear from the description of Iru's sequel that the battle took place "in the midst" of the dining-hall, or *megaron*, in the space left vacant by the seats and small tables that are always described as in rows on either side (vii, 95), and that it was out through the doors of this that Ulysses dragged Irus by the heel, and through the *prothyron* to the *axôn*, and thence through the outer door, the external gate. Both the *aule* and the *megaron* have, as we have seen, each a portal; that of the *aule* admitting into the building from without; that of the *megaron* intermediate between it and the *aule*; and each portal has its own *prothyron* or vestibule.

It is said, however, that the suitors come in (*irou*) after witnessing the fight, which seems to imply, inconsistently, that it took place in the *aule*, unless we suppose either that the ring was formed in the *prothyron* of the *megaron*, or that they followed Ulysses as he dragged out the growing and defiant Irus.

After the phrase, "till he came to the *aule* and the portals of the *aithousa*," we are bound to identify the portals of the *aule* with those of the *aithousa* as admitting to it. But what, then, is the *aithousa*, and was it within or without the *aule*? On the latter point we may gather external illustration from the description in the poem of other palaces. The presumable derivation of the name implies brightness, warmth, as from direct admission of the solar rays.

* A report has reached London that a German architect engaged in exploring the plain of Troy, while making some excavations near the temple of Cybele, has found, deeply on the ruins of a cyclopean wall, about 8 ft. thick. The works were actively pushed on, and, from what has already been brought to light, it is evident that he has at last discovered the remains of the famous palace of Priam. Indeed, he asserts that the part of the ruins already uncovered exactly tally with the description of the place given by Homer in the "Iliad."

In the palace of Menelaus (iv. 302) proper and, indeed, luxurious beds are made up for Telemachus and his companion in the *prodomos* of the *domos*, under the *aithousa*, which here, and constantly, has the epithet *ipodromos*, or sounding; and, again, their bedsteads and beds were yet in a corresponding place in the house of Nestor (iii. 399). This is the *prodomos*, Nestor himself, as Menelaus likewise, retires to his conjugal chamber,—the *mukhos* of the lofty *domos*—a retired apartment in an upper story.

Ulysses also—a beggar truly—but hospitably favoured by Penelope (xx. 1) sleeps in the *prodomos*, though with no bedstead. Fleeces are laid upon a bull's hide, and he is supplied with coverlets which in the morning he takes into the *megaron*, carrying the beds, *spatē*, without. In the palace of Alcinoos he has like dignified accommodation as his sons (vii. 345).

The *aithousa* is thus a member of the *prodomos* at Pylos and Sparta, as of the *aule* at Ithaka; its occupants are always spoken of as in the *prodomos*, but under, not in, the *aithousa*. The *prodomos*, therefore, had its *aithousa*, as well as the *aule*,—or rather we have to infer that the *aithousa* extended round the *aule*, but on the side of the *domos* a *megaron* received a certain development as its *prothyron*, and by closer connexion with the house and its offices became distinguished collectively as the *Prodomos*. Here there is no becoming accommodation to be found for a sleeping-place, while at the remotest extremity, the main gates, goats and cattle brought up to supply a festival, are fastened up. It is under the *aithousa* that Philoetes finds the place of ship-timber which he blockades from within "the portals of the well-fenced *aule*" when the time is coming on for the onslaught on the suitors.

The epithet "sounding" or "resonant," is manifestly applicable enough to a long roofed corridor or large open court.

As regards the *prothyron* of the *aule*, no proof so far appears—let us rather say, no presumption—that it was covered like an advanced portico. The following notices settle some points, but leave this still open:—Telemachus and Pisistratus draw up their horses at the palace of Laodameon as Nausicaa her mule-car at her father's, in the *prothyron* of the *domos* (iv. 20, vii. 4). But when Telemachus takes leave of Menelaus, the horses are put to, and they drive *thronē* to the *prothyron* and the sounding *aithousa* (sv. 191). The great door of the *aule* was thus wide and spacious enough to admit horses and chariot, which agrees with the massive timber that Philoetes employed to block them. We may now also infer that the stables were within these, for the servants on their arrival (iv. 39) had put up, and fed the horses, and prepared the chariot against the bright walls *caprea rigata*. Hence, also, is explained how the dung-bearer of Ulysses came to be placed so naturally, however unhandsonably, near the entrance of the *aule*. The goats and steer brought for the suitors' feast are fastened in the *aithousa* (ix. 178–189). The swine are left to feed about the *spira* (ix. 164). Thus we are brought to the distribution described in the Greek house at Vitruvius, where the main entrance admits horses as well as foot passengers, and the stables are arranged on either side of it, and thus close to the road and as remote as may be from the inhabited rooms.

The *aule*, it is now clear, must have had considerable extent, and is not to be confined to the limits of a mere apartment; it was answerable to the bailey of a Medieval castle, surrounded by a wall, well-built, lofty, and with strong coping. It had one main and strong door,—the *spira* in front of it, whether covered or not, most probably, I think, including a covered portico, is the *prothyron*,—the door has double leaves, and within are stable and stall for manes, horses were unsuitable for Ithaka, and oxen; for the latter possibly only, as they were brought up for slaughter at sacrifice and feasting.

On the return of Telemachus from his excursion, his first care is to reassure his mother; on reaching home, he placed his spear against a tall column, and went in (*tiēu* = *ben*) "himself and stepped over the stone threshold (*latinos oidos*), and here Penelope meets him issuing from her *chalmos*,—which, for anything that appears, is, in its ground plan, the same as on quitting her *gynē* "through out from the *megaron* (viii. 61).

This stone *oidos*, or threshold, is mentioned again (xiii. 88) when Penelope descends from her upper chamber, and "entered passing over

it" to where Ulysses is seated by a tall column in the full blaze of a fire that has been lighted to purify the *megaron*. This, therefore, is the threshold of the door that separates the more public from the private, the *andronitis* from the *gynaikonitis*—the domestic and women's division of the palace. Penelope descends by stairs from an upper chamber (i. 380) to exhortations with Phemius for the painful subject of his Trojan song, and thrice with the suitors, and presents herself before the *megaron* each time "standing by the *stathmos*—door-post" probably—of the firmly wrought *tepos*, or roofed structure (xvi. 413. Cf. v. 449), and again in almost similar terms (xviii. 206, and also xxi. 64). It must be on the inner side of this doorway that Amphimachus "by the stathmos of the *megaron*" (xvii. 96), probably the same as that of the rhyce, reclining and whirling the *spindle* while Telemachus and his guest take refreshment before her, after issuing from the bath provided under the customary tending of the female servants.

It is in this position that the maiden Nausicaa sends to interchange those last words with Ulysses that have touched the tenderest and strongest hearts for thousands of years (viii. 458).

The room which is thus entered from the *megaron*, is perhaps rather of the nature of a corridor, having the spaciousness of a hall, like the *tablinum* of a Pompeian house; we have seen that one *chalmos*, at least, opens into it. It seems to pertain to the division of the general structure, or assemblage of structures, that is sometimes specially designated *dyra* or *ryce*.

In the 19th book we have an example of how the same word is used, in both a collective and distinctive sense, within a few lines. Ulysses, after all have retired, remains alone in the *megaron*. Hither comes Penelope from her *chalmos* to inquire his news of her husband; and the female servants, who had previously been at work from the *megaron*, by Eurycleia (xix. 15–30), came out from the *megaron* (xix. 61–69), and proceeded to clear away the remains of the feast,—the tables and cups of the retired suitors,—literally, therefore, they come out from the *megaron* into the *megaron*; the same observation applies to their entrance (xiii. 497); so in the touching remembrance of Ulysses with Amphimachus *chalmos*, elsewhere, particularly the blackened roof-tree,—is used as general term for the palace,—and to move across the *megaron*, or dining-hall—the "great chamber" of Master Blender, is to proceed *dia dyra* (xviii. 150–153). Penelope, again, speaks of her flock of geese feeding from troughs *sarā cleon* and *erypaiois* (xix. 535).

The conclusion hereafter.

PICKINGS AT THE ROYAL ACADEMY.

THE 1,229 pictures and other works of art exhibited this year in the galleries of the Royal Academy have been talked about at such length in so many places that, in view too of more than ordinary pressure on our columns, we were disposed to confine ourselves to a review of the architectural drawings. We cannot, however, bring ourselves quite to this; but shall, nevertheless, restrict our observations to comparatively few words.

The general opinion entertained that the Exhibition of 1870 is not quite up to the mark of some of its predecessors is probably chiefly due to the absence of those special stars or universally admired personages who, on certain occasions, have taken the public by storm. Of the highest grade of merit illustrated (and that we regard by no means as a contemptible one), there probably will be found a larger number of works than usual; and the absence of very bad pictures, though by no means total, is tolerably satisfactory.

The veteran Landseer, who last year did not expose, even if he could be thought to maintain, his high reputation in his own branch of art, comes to the front with two very remarkable pictures. There is the more cause for congratulation that this should be the case, since Sir Edwin has permitted himself to send for display a picture noticeable for its size, and eminently deserving attention for its subjects, but, in other respects, fit only to be passed by its solemn silence. If the great artist, who has been fettered by "command," could have completed and sent for exhibition such a work we can explain to ourselves only by the same merciful disposition of Providence which seems to protect pain-

fully, and deformed children by an especial share of their parents' love.

Sir Edwin's "Vultiger, Winner of the Derby and St. Leger, 1850," catches the eye before the visitor enters the first gallery. Devoid of the slightest trace or attempt to make a picture, it looks, from that spot as well as on a nearer approach, a live horse, and a very noble one, its blood showing in the delicate nostrils, its points fully defined, and its lustrous skin, not too recently curried, gleaming with apparent swell and rotundity of muscle. Two wonderful calls mostly call on the spectators to share their own evident admiration of the grand quadruped. The background of stall and litter is slightly, but not too slightly, painted in; and we see what a race-horse, not only could be, but actually was in 1850. The second of these portraits of our four-footed cousins has a bad title, which may be taken, we feel sure not correctly, as a skit on a very noble and self-denying profession. It is called, (265) "Doctor's Visit to Poor Relations at the Zoological Gardens." We would take it that the hour of the visit is alone intimated; and that the supremely unconscious black monkey, who sits perched upon a rail behind the larger green ape tending her sick offspring, is not intended for a medical visitor intent only on his fee. The black ingrate holds a large fruit in his hind hands, without prejudice to their function of maintaining him on his perch, at the same time that he is eagerly emptying a similar vicious morsel, which he holds in his anterior grasp. Nature has had a dozen errors in the picture, but the sick look of the baby monkey and the anxiety of the parent are life itself.

The question has been raised as to the true secret of the wonderful manner in which the animals of Landseer lay hold on the mind. It is not by truth to nature alone. It has been suggested that the painter represents human passion under the guise of animal nature. Nature, however, is correct, and not one of the six animals we have mentioned approaches a caricature. We hold that the kernel of the matter lies deeper. There is, to a certain extent, an actual community of passion, and almost of intellectual, nature between man and many of the vertebrate animals, more especially with beasts and birds. The common emotions of parental instinct, gratitude, forming admiration, quiet enjoyment, as illustrated in the paintings before us; the agony of fight or the ardour of the chase; the fierce resolve that turns to joy; the sense of duty, evinced in the performance of the functions of a sentinel; to refer to some others of the best known of Sir Edwin's pictures:—all these are sentiments natural to, and powerful in, both man and beast. The painter who has these sentiments in the moment of their most vivid entirety, clothes them in wall and truthfully rendered animal form, and thus brings "our poor relations" before us, as part of that great family of which we hold the primacy, gives a more deep and truthful lesson than he may himself altogether apprehend; or, if so, he apprehends it, as we admire it, by instinct and not by argument.

It seems somewhat uncalculated to name such a portrait as that of the Marchioness of Huntley after the animal life of Landseer; although the public curiosity has probably followed this order in seeking gratification. The large price of two thousand guineas, which is known to have been paid for this portrait, hardly affords so good a reason for giving it minute attention as he found in the beauty of the subject, and in the brilliant skill of the painter. But the truth is to be held to above all things, and the truth we take to be, that Mr. Millais has scarcely consulted his own great reputation, of which we all feel justly proud, by the style in which he has turned out of hand this, as well as some others, of his later works. From a certain standpoint the effect is a picture. But a somewhat more is needed in a picture that is to live. The lady is represented as standing in a conservatory, with a basket of flowers on her left arm, and her garden scissors hanging from her right hand. Attitude and expression are noble and dignified; the features are beautiful; and the close bands of dark hair set off a thoroughbred head. In play and sparkle of colour, lighted up by the contrast of the basket, and shaded by the ground and background greenery, there is nothing left to be desired. But the tropical plants behind the noble lady are indistinct almost to smudgeiness. The trees worn in a fairy bower, if viewed from a distance, display splotches of white paint, which seem as if laid

on with a trowel, when looked at closely. It is to be feared that a picture turned out of hand with this roughness will not be popular.

We write with an unaffected regard for the fame of an artist as to whom we think that England owes no more effort than he should waste his time in fanciful experiment, than it could in the regrettable case of Sir Joshua Reynolds. We see, in the main body of *Lady Hester*, in the ribbed trowsers and shoes of Mr. John Kelt, a result of a visit to M. Doré's gallery. But it is the handling of his Francesca, not that of his Alace Keltner, by which M. Doré will wish to be remembered; and a similar opinion will, we have no doubt, hereafter be that of Mr. Millais.

Of the other pictures by this artist, that of the boyhood of Raleigh is, perhaps, the finest. There is more careful painting on this canvas than on those we have cited. On the other hand, there is a luxuriant wealth of colouring that almost fatigues the eye. The blue of the sea, the green of the lad's dress and hat, the Brazilian shimmer of the hoop of pebbles, the fiery glow of the rusty anchor, the strong but not inappropriate colouring of the tattooed vagabond who is feeding and intoxicating the lad with tales of travel until his soul seems ready to leap from the blue depth of his eye, are all evidence of a wonderful mastery over colour. The attitude of the boy is admirable. This is a picture which, somewhat toned down by age, the painter may be proud to leave behind him.

Another charming work by Millais is "A Flood" (No. 91). A wooden cradle, containing an unconscious infant, is floating, or, perhaps, stranded, on a muddy lake, caused by a sudden overflow of the fens. On a tree, dripping with brilliant rain-drops, and with its branches encrusted with such emerald and ruby lichens as grow not in any but fey lands, sits a wet chaffinch. In the danger of the hour, the child's fellow traveller, a miserable, drenched kitten, mews forth her alarm, unattracted by the vicinity of the bird. The parents are putting off in a boat in the dim, Dutch distance. The patch-work coverlet, and the floating jug of yellow ware, give a homelike truth to the scene.

But the work of Mr. Millais in the present Exhibition, has most interest to those who look to the future of art in this country, is No. 202, "The Knight Errant." A beautiful woman, entirely undressed, is bound to a bench standing in the centre of the picture. A knight, clad in full plate armour of the sixteenth century, is cutting the rope that binds her. The corpse of one of the ruffians, whose handiwork he is undoing, is visible in a dell hard by; and the distant figure of two other brigands are defied in hasty flight against the horizon. The tree is a miracle of forestry. The face and attitude of the knight are tender and gentle; the colouring of the picture is worthy of the peace of Mr. Millais. But how about the main motive, — the captive? The reply to this question is a matter of no ordinary importance, and yet we will not here pursue it.

The name of J. L. Gérôme appears with the initials denoting an honorary foreign associate, and pictures from this artist are on the walls of the Academy. No. 18, "The Death of Marshal Ney," is a powerful, gloomy sketch. The form of the "bravest of the brave" lies extended on the ground. The firing party is busily retreating, as if ashamed of their work; an officer glances over his shoulder at the scene. Two or three fresh marks on the plaster of the wall, above the fallen man, tell a sorry tale in a fearful language. The great dome of the Invalides rearing through the mist beyond seems to speak of the murder of the soldier, when the error of the man clergy had been forgiven. A still further demand on the capacity for awe and romantic sympathy is made by (885), "Jerusalem." Yet this well-known picture so outrageously defies not only realistic truth, but the harmony of historic incident, that it will not bear the slightest criticism in this respect. A long, picturesque group of half-broods, preceded by white-robed Jews, is winding along a road leading from the Olivet hills, east of Jerusalem, towards the Holy City. The double gate towards which their course tends is, apparently, meant for St. Stephen's Gate. But the wall is about as much like that of Chester as that of Jerusalem. The locality seems to have been rudely sketched from a drawing, by Count de Vogé, of the present state of the city, neglecting the great changes effected by the siege under Titus, as well as by subsequent events. The mighty wall of the Haram has

dwindled to a mere parapet. The deep cleft of the Kedron valley is nowhere. On the area filled by the courts and colonnades of the Temple, and by the fortifications of Antonia, grow trees like those in a modern cemetery. Ridiculous little bits of building, miniatures of the mosques El Sakrah and El Akrah do duty for the gorgeous temple of Herod. Nor is the want of true topographical alone. The group following the soldiers from the ladder and other insignia which they bear, as well as from the mysterious darkness spreading over the scene, appear to be intended as proceeding to the Crucifixion. They could no more have approached Jerusalem from the east for such a purpose than a review in the middle of the last century could have conducted Grey to the Tower. The gloomy, drifting veil, towards which two of the groups are, very theatrically pointing, seems intended to indicate the supernatural darkness of the hour. The idea suggested that the effect produced is of volcanic origin, is one which is not unfamiliar to those who are accustomed to these aerial phenomena. But the moon, which was at the full at the Passover, is represented as crescent! Nor is the actual progress of the profound darkness in which stormy volcanic ashen veil a landscape such as is here represented. It advances like a wall of night. Before it, all laughs in raucous behind, or beneath it, all is obliterated from the view. It is like throwing a mask of ink over a landscape.

Alma Tadema contributes three of his Roman interiors, gleaming with marble and paved with mosaic. The faces, although for the most part Roman in features, wear a pale, sad expression. These graphic restorations of the buried life of the Campanian cities might almost serve as illustrations of the occupations of the Elysian fields.

Of Mr. Calderon's four pictures, one is a very charming one, "The Orphans" (143). A girl, dressed in mourning, playing a harp, as an endearing minstrel, in the snow; her little brother, the sorrow of their mourning heightened by the incongruity of his stained red stockings, looking on with eyes that must be seen, not described. We do not envy the man who can look at this touching picture without feeling a tightening in the throat, or a mist coming over his eyes.

Mr. E. M. Ward, R.A., has produced a picture that will live, in (263) "Judge Jeffreys and Richard Baxter." It is full of striking contrasts, all blended and bound together by the story. The vulgar, insolent judge thundering from the dais—the dignified, sorrowful of the last production of the defendant,—the manly, indignant self-control with which his supporter regards the unjust judge,—the courtier pointing justly to the scurrilous rogues,—the old dame, in a Welsh hat, expecting to see some sign from Heaven to rebuke the law's impy of Jeffreys,—the beauty, in a fashionable dress, moved and agitated,—these are only some of the many telling points of this admirable picture. No. 363, by the name, "The Daughter of a King," is well known, from an excellent engraving.

Mrs. E. M. Ward's "First Interview of the Divided Empress Josephine with the King of Rome" (No. 916), is characteristic and suggestive in expression, full and rich in colour, and careful and level in finish. It is no small praise to say that it seems to us the best picture our accomplished countrywoman has yet painted.

There is something very charming in Mr. G. O. Lodge's "The Gleaners" (161), a group of country girls watching the course of the harvest which they throw into a little mill-stream at their feet, to indicate, by their prosperous or adverse voyage, the course of their own true loves. The picture would have gained by additional height, as the park scenery stretching behind gives a background of unbroken green, to the exclusion of sky. No. 216, "Carr," by the same artist, a flower herself, contemplating other flowers, is also very pleasing.

The water in No. 45,—"Clare Island," the wind going down with the sea," by J. Brett,—is admirably well and brave on the canvas. A scene on the west coast of Ireland. No. 129,—"Contingents to a melancholy Ocean,"—is another fine sea-piece by the same artist.

"Michael Angelo," in No. 124, by H. O'Neill, does not grasp his chisel like a sculptor, least of all like the most fiery of sculptors. He is a student, studying, and in his own shadow. The subject is well chosen.

One of the most pleasing pictures in the exhibition is (157) "Sir Roger de Coverley and the Perverse Widow," by W. P. Frith. The artist has admirably expressed the selfish, unimpr-

aisable character of the coquetish widow, under all her beauty and rare attractions. "Sir Roger!" who could resist that adjustment of the tucker? The confidante is just malicious enough; one can see how her mischief would burst into flame when the knight was gone. His manly beauty is of a noble type—the perfectly-arranged dress, the honest, earnest, manly face that beams from the folds of the screen and the carpet unite with those of the dress in a well-adjusted harmony. It is a charming picture. Not less so, in design and execution, is No. 267, "The Pulse, the Husband, Paria," No. 964, "Mrs. Rousby as Princess Elizabeth in 'Twist,'" and No. 965, "Princess Elizabeth, both, but Mrs. Rousby. It is none the less charming for that defect.

"Louis XIII. and Louis Quatorze" (No. 161), is a subject which we suggested to Mr. Calderon for a theme some three years ago. It is admirably rendered by Mr. Rousby. The great contrast between the palour of the dying king, the fresh health of the infant dauphin, whose likeness is most truthfully preserved, and the anxious, boding, look of the lady who has him in charge, is very fine. "An Arab Toilet" (No. 986), by the same, is bright with Oriental life and colour. Mr. Cook has some fine landscapes, close adjacent as those of Canaletti, with more depth and power than is often evinced by the Venetian painter. (87) "Venice," a moonlight view; (189) "A Calm Day on the Scheldt;" (296) "A Topo, or Lagoon Fishing-boat, Venice," heavy with the repose of Italian noon; (356) "Landing Fish—Coast of the Dyring king, the freshwater Ditch boat, and leathery sails, are all pictures full of the beauty of nature.

We cannot pass 450, "St. Francis preaches to the Birds," by H. S. Marks. The saint has a more respectable and attentive audience than always falls to the lot of his followers now-a-days. All birds most rare and bizarre in beak, and plume, and ruff, and whisker, are there. The hungry pelican crouches on the ground; the kingfisher perches its prey unheeding the words of peace. The preacher is a little like Dean Stanley. The birds are much more lifelike than the stuffed remains that suffice under secular collisions of dust in the British Museum.

Mr. Fied's little Irish boy slipping out of his garments "when the day is done" (192), is very true to nature. The "Highland Mother" (908), though rather rough, is effective.

We must not omit to notice the life, and movement, and full, stirring effect of the last production of Maclean, (197) "The Earl of Desmond and Ormond." The fiery gesture with which the prisoner throws up his arms is reflected, as it were, by the arch of the rainbow. It is thus that a hope, which is not altogether of the earth, erith, attends on the indomitable struggles of grief and perseverance, in days of meane and of evil.

MINTON'S CHINA WORKS.

FOREIGN among the industrial "lions" connected with the ceramic art, stand the china works of Messrs. Minton, at Stoke-upon-Trent, some account of which will doubtless interest many readers of the *Builder*. The works were established in the year 1759, by the late Thomas Minton, a native of Shropshire. Mr. Minton was a man of great energy, and a high character. He commenced a time very favourable for progress. The labours of Wedgwood, which had attracted so much attention to English pottery, had paved the way for success, and called for an increased production. An import trade had in fact been converted into an export one. English pottery then commanded a high range of prices, and it may be interesting to remark that the old "willow" pattern was first introduced in these works (copied from an old Chinese plate, the production of Ching Chang Foo), and was then sold at 6s. 6d. per dozen plates, whereas the present price averages about 2s. The production of pottery then commenced on a large number of years principally confined to useful articles; and being of a good durable material, without much reference to artistic decoration, soon commanded a good position in the home market. Mr. Minton's career was highly successful throughout, and ending, as it did, in a long and famous competence. He was succeeded by his second son, Herbert, who obtained, as is well known, great eminence as a potter. He was possessed of a fine cultivated taste, with indomitable energy to carry out his views in im-

proving the art. He invoked the aid of the best talent at his command, both English and foreign; and the specimens in almost every variety of style shown at the Exhibition of 1851 may be referred to as proofs of his success. On that occasion, the most magnificent Minton majolica ware, now so celebrated, were exhibited; and was also for the first time a combination of Parian statuary with decorated porcelain for domestic services. The service of this class was purchased by her Majesty as a present to the Emperor of Austria. Mr. Minton was commissioned by her Majesty to make the presentation; but, as great coolness had arisen between the two courts on account of a speech made by Lord Palmerston, some delay and difficulty occurred in obtaining an audience; but it was at length satisfactorily accomplished; the present was graciously received; and cordial relations were soon afterwards resumed. Mr. Minton was throughout his career as much distinguished by his philanthropy and liberal support of every benevolent object as he was for his skill and eminence as a potter. It may be mentioned that amongst his many other labours, he built and endowed the beautiful church at Hartley Hill at his sole cost. After a brief retirement from the active pursuit of his calling he died at Torquay, in 1858. It should have been mentioned that to Mr. Minton the public are indebted for the revival of the art of making encaustic pavement tiles. In 1851, he demanded for churches and other public as well as private buildings. It will illustrate the character of the man if we state that for many years he pursued this branch of business at a very considerable annual loss; and when on one occasion he was urged by his partner to give it up, his characteristic reply was, "I say no more, now: I will make encaustic tiles if they cost me a guinea each." Mr. Minton took an active part in preparing for the Paris Exhibition of 1855, and had repeated interviews with the Emperor, who presented him with the Grand Cross of the Legion of Honour. Mr. Minton was succeeded by his nephew, Mr. Colin Minton Campbell (High Sheriff of Staffordshire last year) and Mr. Michael Dainty Hafford; and these gentlemen worthily emulated the conduct of their deceased relative by doing all in their power to continue the fame that had been achieved, until they dissolved their partnership in 1868. The encaustic tile department devolved upon Mr. Hafford, and all the other branches of manufacture are carried on as usual by Mr. Campbell, in conjunction with his cousin, Mr. J. W. L. Herbert Minton, so that the old name is as likely to become extinct.

The manufacture of the firm embraces nearly every article of the potter's art; so much so, that any one embarking in the retail trade might, from these works alone, completely furnish his shop, from the richest and most costly ornament, to the requisites for kitchen use. The cost expended in modelling these varied manufactures, has been enormous, as any one would readily imagine who paid a visit to their show-rooms, which contain only their own productions. The annual value of the ware produced has averaged of late years about 105,000l.

The number of hands employed, is between 1,500 and 1,700, and there are three tiers upwards of 500 females, a field of especial interest to the Society for Promoting the Employment of Females; but the products of the industry of this large number will make but an indifferent show at the forthcoming "Workmen's International Exhibition." The great number are regularly employed. The great number are employed in enamelling; that is, in coloring patterns that are printed in outlines. Others are engaged with the printer transferring the prints to the ware; some attending the throwers and turners; and many engaged in the ware-houses. There is only one lady painter at the establishment, and she boldly challenges competition with the sterner sex. The art-director of the establishment is Mr. Leon Amox. There are two clever German painters; all the rest are English, some of them superior artists, and who derived much advantage from their course of study at the School of Art, which painter at the building erected as a memorial of the late Herbert Minton, in this town.

The firm gained the council medal at the Exhibition of 1851, and the *medaille d'honneur* at the Paris Exhibition, 1855.

"A Place Open to Merit."—Several correspondents inquire for further particulars. We must refer them to the Office of Works.

SIR JAMES Y. SIMPSON, BART.

Sir.—From his endeavours to aid in the improvement of the construction of hospitals, and the proposal to place a monument of him in Westminster Abbey, a separate memorial note of Sir James Simpson may, perhaps, be allowed to appear in the *Builder*.

In reference to his attack on hospital crowding, Dr. Millington, who was a pupil of his, says,—

"One matter, from its vast and increasing importance, must not be passed over. The humane mind of Simpson has directed for years before his death to a subject which is only just now receiving the attention it ought to have received. He had long laboured, and as the result of dissections in large hospitals, and after ten years' investigation he began an attack on hospital crowding, and the direct evils which result from it. His vigorous mind was to the very last occupied with what has taken the name of 'Hospitalism'; and the results of his labours have yet to come; and in the opinion of the writer, be productive of incalculable good; though the subject has not yet been investigated so thoroughly that the exact nature and extent of the more efficacious operations performed in large hospitals can be said to have been thoroughly ascertained."

Dr. Millington states, that Dr. Stanley, the Dean of Westminster, had readily consented to the burial of Sir James Simpson's body in Westminster Abbey, by that time preparations had been made for a public funeral at Edinburgh; and seventeen hundred persons followed his remains to the grave.

In the numerous accounts of Sir James's doings which have appeared in the newspaper press, there are a few shortcomings, errors, or omissions, in reference to certain points, which it may be allowable for one, even here, to note, who was intimate with him, and honoured with his friendship, as I was, at a time when the baker's son had not many friends. One of these notes is in reference to his great discovery of the anæsthetic power and use of chloroform, but that does not precede him in the use of *ether* in tooth drawing, or even in other surgical operations, may, doubtless, be the fact; as it was, indeed, that Sir Humphrey Davy had, many years before, called attention to nitrous oxide, as a power which had rapt him up, out of the fleshy and pain-feeling state, into the quasi-spiritual; and induced him, while in that state, to announce, as an "infallible" oracle, that "nothing exists but ideas." That Simpson, however, was the exclusive originator of the professional practice of destroying pain in childbirth; and had the idea, too, of procuring it to be applied to Morton the American dentist's professional experiments with ether in 1846, the writer of the present note for one can testify. Before that time, Simpson and he were associated in an investigation into the reality or feascity of artificial entrapment, by what is called mesmerism; as many of the noted citizens of Edinburgh, who witnessed our joint experiments, well knew; and, although some of these,—such as Sir William Hamilton, Dr. Combe, and others,—are now dead; others, such as Mr. Robert Chambers,—and Professor Balfour, of the Edinburgh University, who kindly introduced me to the House of Commons by his witness, does Mr. James Gall, son of an early inventor of a system of printing for the blind, who took part in our investigation; as also, for a time, did the late Mr. W. B. D. Turnbull, Advocate, or Scottish Barrister, but lately of the Rolls Office, London, a similar connexion mine, whose name, as the House of Commons by the Exeter Hill patrons killed him.

Now, at that time, or between 1835 and 1840, Dr. Simpson steadily entertained the idea of using the "deep sleep" and pain-killing power of artificial entrapment in midwifery, or for the facilitation of the natural birth with ease, and had a curious antithetical co-relationship to that, as it related to an investigation of the spiritual birth of the life of entrapment itself, which has since been more fully carried out at Glasgow and London. A writer in the *Scottishman* newspaper, ignorant of Dr. Simpson's position, and the character of that time, thinks proper to speak of him in terms of regret, and almost console, that he should have dabbled, idly, as he seems to think, or without a direct purpose, in what was then (if it is not still) a sort of taboed line of research amongst medical men. Simpson's unceasing experiments, and his only object, his steady purpose, and his superior sagacity and moral courage, although he failed to render either artificial entrapment, or ether, or nitrous oxide, subservient to that grand and destined purpose of his life. It was to him quite a secondary matter, certainly; but I have seen him also experiment on the possibility of performing surgical operations on the entranced, by singing with a red-hot poker

the eye-brow and the flesh of entranced patients in the Lock Hospital, at Edinburgh, of which he was at that time the superintendent. And neither did he spare himself in his experiments with chloroform; for before any other human being had ever been rendered insensible by it, he tried it on himself and his assistant; and his first knowledge of its leveling power was acquired beneath his own table, where he found himself lying when he came to himself. This anecdote I have long known, although I had by that time Edinburgh, and did not witness it. I mention it now because I have not seen it stated in any of the numerous memoirs of him at present in circulation. Nor have I observed another interesting anecdote of Simpson, with reference to his election by the Town Council of Edinburgh, his successor to Dr. Hamilton, the Professor of Midwifery in the University there, which election I had the pleasure of promoting through friends of the council. There was a strong opposition, and the election was at one time very doubtful. A serious objection to him as Professor of Midwifery was that he was not a married man. This "bad" Simpson at once "took by the horns." He immediately prepared a home for his intended bride, a most attractive and amiable lady, a cousin of his own, whom he had long previously, I believe, selected as his choice; and at his "home heating," before his marriage, I had the honor of being a prominent part. His marriage then took place; and, no doubt, to the surprise and mortification of some of his opponents, the serious objection that he was unmarried no longer existed at the time of his election. JOHN E. DOVE.

KENSINGTON GORE ROAD, HALL OF ARTS, AND THE PARK.

The proposed change of roadway and elision from Hyde Park of an elongated strip of 25 yards in width by 500 yards in length, from the Queen's Gate to the Prince's Gate, have caused much public anxiety, and even more serious alarm to the residents of the now extensive and fashionable vicinities of South Kensington.

As the stupendous Colosseum approaches completion, and the lustreous monument to Prince Albert will soon be divested of its scaffolding, some alteration of the roads and grounds have doubtless become requisite; but the conversion (now in progress) of the old ride along the down-walk to the Colosseum, and the construction of a new driveway from the Serpentine Bridge to Exhibition-road, not only met the difficulty, so far as the monument is concerned, but effected a great public accommodation.

What now seems to be desired is to divert this so the principal thoroughfare at the West end, as to remove the distance from the Hall of Arts, and to make it quadrate with the Horticultural grounds and conservatory, with which the longitudinal axis of the Colosseum is at right angles. It would be well to have an enlarged foot-way in front of the portico and chief entrance on either side of this magnificent structure; and if this can be done without invading popular privileges of park, and, above all, without removing a range of finely ornamental and nearly full-grown trees, surely the Commissioners may feel satisfied, even although the enlarged road and pathways may not critically square with their oval.

If the long reach of park required should be conceded to them, adieu to the sylvan and ornate character of this portion of Hyde Park. Not fifty, but nearly double that number of vigorous and unbranched foresters must be disposed, to be topped 20 ft. up in air, based as these in Park-land have been for two years, so as to attain afterwards a sickly vegetation; and all this at an enormous expense and waste of woodland scenery.

Having, many years back, given, through the *Builder*, hints as to the removal of the old park wall along Piccadilly, and the preservation of the down slopes which now grace the footway, as on a Parisian boulevard; and since that time (about 1859) having recommended, through the same source, the widening of Park-lane, and its extension through Hamilton-place, at the same time showing that the rapid growth of the vigorous and spreading plane might be left in the park-side footway; perhaps, although my views in the latter case were not fully agreed with, I may be allowed to suggest a plan which may meet with general approval, and possibly reconcile difficulties "de part et d'autre."

To cut away and desolate three or more acres of the park, in this its most valued part, cannot be tolerated; while to utilise a narrow strip, without disturbing a branch, if it tend to general enjoyment and convenience, may meet the difficulty.

In brief, then, my plan is to leave every tree as it is.

The outer row of elms, with some planes, chestnuts, and birch, number fifty-five between the Queen's Gate (Albert-road) and Prince's Gate; and thence to the barrack stables there are ten more. This range of vigorous foresters, well spread, and in height from 30 ft. to 60 ft. stand, on an average, 6 ft. inside the park rails, two only being within 5 ft.

The park-side footway averages a width exceeding 15 ft.

The driveway varies from 44 ft. to 34 ft., and the paved footway on the south side from 8 ft. to 10 ft., giving an entire width of causeway, in some parts of 55 ft., and between Albert and Exhibition Gates of 74 ft.

Now, it is quite clear that, if the present railing were withdrawn parkward, and replaced by 18 ft. inside the row of trees, forming a gravel walk of that width (shaded also at intervals by many old standards), the width of the present external footway, together with the interval of 6 feet between the tree range and the now-standing fence, would increase the carriage driveway by 30 ft., and thus ample scope for widening the paved footway on the south side: thus an external footway of 18 ft. (beside the diameter of the growing trees—say, 2 ft.) might be secured to the public, without any apparent effect in the park grounds, whilst such an arrangement—vide Park-lane, vide Birdcage-walk—would rather give apparent extent to the park, at the same time conferring improved value on the vicinage and inestimable solace to those who wend their way afoot.

The site and direction of the Queen's and Rotund Gates would appear to favour such an adjustment, as they both stand back (inward) from the line of railing; viz., Queen's Gate 18 ft., and at Rotund Gate the railing curves outward 15 ft. towards the cavalry stables.

As to the Guards' barracks, their structural unsuitness for troops, the incalculable damage they inflict upon the grandest site of the western metropolis, the impossibility of extending improvements towards Knightsbridge whilst they are continued there,—this part of the subject has been fully treated years past in the *Builder*; it is therefore deferred, only remarking now that the position and aspect of the officers' quarters, mess-rooms, &c., may, in some degree, strengthen the position; otherwise, Chelsea, for cavalry, would surely be near enough, if our Foot Guards find it agreeable.

QUONAM.

CARLISLE BRIDGE, DUBLIN.

It has been stated that the design by Messrs. Lanyon & Co. is to be carried out at the estimated cost of 60,000*l.*, and the citizens of Dublin are inquiring why Mr. Charles Ghegan's plan, which would give all they want for 30,000*l.*, Messrs. Courtney & Co. having offered to do the work for that sum, should be superseded. We have not yet seen any sufficient answer to this inquiry.

FAILURE OF COLUMNS. ST. SWITHIN'S, LINCOLN.

We are informed that the pillars in the church now building in the old Sheep-square, Lincoln, have failed. The local *Gazette* says the parish committee has examined the pillars, and not only are they of opinion that they must be taken down and rebuilt, but the architect (Mr. Fowler, of Louth) coincides in this opinion. A few days ago a meeting of the Building Committee was held in the vestry, and it was determined that the blame attached to the architect, and he was required to pull down the interior pillars, and rebuild them at his own cost. To this resolution Mr. Fowler demurred. He admitted that the pillars must come down; but he did not think that he was called upon to rebuild them. On Friday morning another meeting of the committee was held, and Mr. Fowler admitted the necessity for immediately pulling down the pillars, which have cracked in all directions, but affirmed that the cause of their giving way must have arisen from accident, or from bad workmanship; whilst several members of the committee insisted that the giving way

of the pillars was caused by the material that had been used.

After discussion, it was ultimately resolved that Mr. Christian should examine the pillars, and report the cause of the failing. If the cause arise from improper design, or from the material used being inadequate to bear the superincumbent weight, then the architect is to bear the cost of rebuilding; but if the defect arise from bad workmanship, then the cost of rebuilding is to be borne by the contractor—the cost of the reference to follow the decision. This resolution was agreed to by the architect and Mr. Lovele, the builder, and both parties signed the resolution.

TUNBRIDGE WELLS INFIRMARY.

THE re-opening of the infirmary here has just taken place. It is situated in Greenow-road. The building has been renovated and enlarged, under a contract with Mr. Strange, builder. Almost three-fourths of the place have been built, the old infirmary being composed of nothing more than ordinary rooms, which are now enlarged to good-sized dining-rooms, and capable of accommodating twenty-four persons. Some rooms, however, have been added, and taking all the rooms into consideration, accommodation can be found for thirty-eight persons. There are two men's wards, 16 ft. by 46 ft. and 14 ft. high, to which are attached bath-rooms on the first floor, and laboratories on the second. In conjunction with these there is a wash-house, furnished with carpets, pictures, tables, chairs, &c., by the Hon. F. G. Moynaux. This room is to be used by the convalescent, and for their amusement several games are provided. There are two women's day wards, furnished by Lady Georgiana Moynaux in a fine style. In conjunction with these there is a wash-house, with laundry, cooking-kitchen and scullery, larders, cellars, and store-rooms. In the hall a lift has been invented, 7 ft. by 5 ft., to take up three at a time,—the patient and two assistants. On the opposite side is a lift of smaller dimensions, for sending up dinner, &c. There are a great number of pictures in all the rooms, and quotations from Scripture.

METROPOLITAN BUILDINGS BILL.

It is unnecessary to pursue our comments on the Bill before the House, as we have no doubt it will be withdrawn. We have before us several letters on the subject, and some observations by Mr. John Liddle, the Whitechapel Medical Officer of Health; but it would be useless to print them. The Board of Works must be more careful next time. This is not the first withdrawal, and such work costs money.

PARLIAMENTARY.

New Law Courts.—In answer to Mr. Alderman Lawrence, Mr. Ayrton said he was unable to place block plans of the New Law Courts in the library of the House until they received the sanction of the proper authorities.

Leicester-square.—In answer to the same member, Mr. Ayrton said that some years since an Act of Parliament was passed, enabling the local authorities to take possession of any vacant space in the metropolis for which an owner could not be found. The local authorities had done so in the case of Leicester-square; but an owner at once turned up, and established his title. The square, therefore, being private property, nothing could be done until they found a law enabling them to dispossess the owners. The sooner the better, said we.

Workmen's Inventions.—In reply to a question from Mr. Hughes, the Attorney-General stated that proper steps would be taken to protect the unprotected inventions of workmen in the forthcoming International Exhibition. He believed that the Act of 1865 would be insufficient, in consequence of the interpretation that had been put on it, that when a workman exhibited an invention another person might take out a patent for it. He proposed to introduce a short Bill, giving the workman protection for his invention for six months from the commencement of the

Exhibition. He had arranged with the secretary of the Exhibition for a list of the inventions of workmen to be exhibited.

The Supply of Water.—Mr. Whalley asked the Home Secretary, with reference to the recommendation of the Royal Commissioners that the supply of water in the metropolis should be on the system of constant instead of intermittent supply, whether it was the intention of the Government to adopt any such system, with a view to giving effect to such recommendation. Mr. Bruce said that the Royal Commissioners went much further than the mere question of the intermittent or constant supply of water. They proposed that all the property of the private companies should be transferred to a central body, and that from that time forward every household should be obliged to take water on the condition that he was constantly supplied. The necessary preliminary to giving effect to that recommendation was to create a central authority. He had been in communication with the Metropolitan Board of Works, and he had come to the conclusion that this measure could only be properly carried into effect when the measures for creating a general municipal government for the metropolis had been matured.

BARRACKS IN WINDSOR.

THE British soldier in full training is an expensive article. We are reminded of this fact year by year as the army estimates are brought forward in the House of Commons. Whether he be an article of necessity or of luxury, it is not within our province at present to dispute. If it be true of the army generally that it entails heavy expense, it is more especially so of that portion of it known as the household troops. The duties of the regiments of guards in ordinary times never extend beyond our own shores, and seldom to any other places than the metropolis and the royal borough of Windsor. The only exception to this, perhaps, an occasional month under canvas at Aldershot. The household brigade is admitted, and deservedly so, to be the élite of our army. In dress, drill, and equipment it is unequalled. It is not often that we indiginate any grand military show, but whenever this is done, our guards form a sight of which any Englishman may well feel proud.

But although we have always been careful to have these troops well clothed, well fed, and have maintained their equipment and drill at a high point of excellence, there has until lately been one great defect. The barracks accommodation for this portion of our military force was not only not the best, but was certainly below the average. This was especially the case at Windsor, where both the cavalry and infantry barracks were defective and insufficient. It had become a well-known fact that the rate of mortality in these regiments was much too high. Taking into account the care exercised in the selection of recruits, and that these troops had not to endure any of the hardships more or less incident to the life of a soldier, the high rate of mortality among them could only be accounted for in one way. It could only arise from the inferior accommodation provided by such barracks as those in Sheet-street, Windsor, or Portman-street and Charing Cross in London.

The matter having, of necessity, forced itself on the attention of the military authorities, inquiries were instituted by the War Office. This led to the discovery of the state of things, and, in London, to remove the barracks to more eligible situations, in order to secure the better health and longer life of the guards. It was, therefore, determined to make very extensive alterations as well as additions to both cavalry and infantry barracks in Windsor; and in the present paper we propose giving some account of what has been done to the latter.

What must now be called the old barracks had its entrance in Sheet-street, at a point where the street was narrowest. It occupied nearly the four sides of a quadrangular site, the entire area of which was a little over a third of an acre of ground. The parade-ground (if it deserved the name of one) covered a space of about 2,000 square yards, and was scarcely large enough to muster the troops in garrison. The main block of building faced Sheet-street. It contained thirty-two rooms, measuring some 50 ft. by 30 ft. in extent, and of a height of 12 ft. Each of these rooms was occupied by twenty-eight men, thus giving a superficial area of 40 square feet, or 400 ft. cubical measure, to each man.

It will thus be seen that the men were huddled together in very insufficient space; and it could hardly be wondered at that their health suffered in consequence. Nor did their officers fare much better; for their quarters were of a description not at all befitting the rank and position of the gentlemen usually holding commissions in the Guards' regiments.

Then, again, there was no accommodation whatever provided for the married soldiers. These were obliged to live out of barracks, either in lodgings or in small cottages, wherever they could find them in the town. This was not only very inconvenient, but often entailed a heavy expense on the men themselves.

It will be readily supposed, that a space so confined as that we have described anything approaching to free exercise or recreation was out of the question. As a natural result following this, a considerable proportion of the men were often found either incapacitated for duty by actual sickness or showing that want of robust health which always, more or less, marks those who live in confined spaces.

It may reasonably be doubted whether any other European government would have suffered its choicest troops to be accommodated as our Foot Guards were at Windsor; and hence our national credit was somewhat at stake. Although many royal and distinguished visitors came to the royal borough to see its castle and the attractive scenery around it, or to be the guests of Her Majesty, yet amongst the many sights worthy of their notice we could never include the infantry barracks, except it had been to disgrace us in the eyes of those who saw it. Now, however, all this is changed. It is well known that the Queen has taken a deep personal interest in what has been done to secure the comfort and health of the troops. To do this a large outlay has been absolutely necessary, both in the purchase of ground and in the erection and alteration of the buildings; but, even financially considered, this outlay has been a wise one.

Previously to the alterations there stood in Sheet-street, and close to the barracks, a block of old, decayed almshouses. These being sold, the War-Office secured the site, with a view to commence the necessary alterations. Behind the main block of the barracks, which we have already described, was a narrow lane, and, further in the rear, a large space occupied as garden, in which stood some eighty or ninety one-story cottages. Most of these were little better than hovels, and were simply a disgrace to the town. The authorities at the War-Office ultimately succeeded in securing the whole of this space, and shortly afterwards the whole of the cottages were cleared out, to commence operations.

The additional area of ground thus acquired amounted to nearly five times as much space as that of the old barracks, its parade-ground included. Since then an additional site, occupied by a public-house known as the Fire Bell, has been purchased, at the southern extremity of the old barracks.

The first part of the undertaking was to provide the much-needed accommodation for married soldiers. The block for this purpose was erected partly on the site of the old almshouses already mentioned, having its end abutting on, and the block itself standing at right angles to, Sheet-street. The contract for this was taken by Messrs. Myers & Sons, of London, and it is now nearly completed. It is quite new in style, if we except the outside galleries, by which the rooms of the upper stories are reached. The block is three stories high, and access to the second and third is gained by a common staircase leading to the galleries. These galleries are constructed of iron, supported by pillars, and give the whole a very neat if not ornamental appearance. Accommodation is provided for thirty-two married soldiers, each occupying one room, the dimensions of which are 16 ft. by 13 ft., and 10 ft. in height, thus giving a cubical space of 2,160 ft. The rooms are each provided with a small cooking-range, with oven. The water-supply consists of three tanks, two of which hold 430 gallons each, and the remaining one 800 gallons. Each room is lighted from both sides. The arrangements for ventilation are very simple, but in practice are found effective. In fact, there is more reason to complain of draught than of want of ventilation. A separate shaft for each room carries away the foul air to the top of the building, while fresh air is admitted from each side by means of perforations.

The second part of the undertaking, and included in the same contract (about 14,000 l.) was the erection of quarters for the staff-sergeants and sergeants. This block, which stands on the north side of the new quadrangle, has somewhat greater pretensions to architectural taste than the one already described. It contains thirty-two living-rooms, besides the mess establishment. Fourteen of these are occupied as double rooms by those entitled to this privilege, and the remaining eighteen as single rooms. The mess-room is one of fair proportions, measuring 42 ft. in length by 24 ft. in breadth, and 14 ft. in height. With its draped windows, its walls decorated with engravings and photographs, its billiard, bagatelle, and writing tables, it wears an air of comfort very much in contrast with old quarters occupied by these officers. Behind the mess-room is the kitchen, admirably fitted up with everything that such a place requires. Near to it are the cook's room, the larders, cellars, and other necessary conveniences. Water is supplied from four cisterns, and there are sinks and water-closets on each floor. The height of the rooms and the arrangements for obtaining ventilation, along with the other improvements introduced, cannot fail to have a beneficial effect upon the health and appearance of the officers, as well as upon their wives and children. Nor will the social and moral effect be less pleasing; for here they can have enjoyment and recreation, such as will, it is hoped, be preferred to spending time and money elsewhere.

When this block had been completed, the guard-house block was commenced near the new entrance in Victoria-street. Meanwhile, the whole of the new area had been walled in with a pannelled wall 14 ft. in height. The guard-house buildings are only one story high, and include a room for holding court-martials, a room for the commanding officer, an orderly-room, a guard-room, and a lock-up with five cells. Behind these is an enclosed exercise-ground, for the use of prisoners who are in custody. Outside the two frontages of this block are raised pavements, which are roofed with rough plate glass, the framework being supported on pillars in front. These are available as a sunny parade in wet weather, and as protection for those on duty at the guard-house. The contract for this was also undertaken by Messrs. Myers & Sons, the cost being about 2,000 l.

The new entrance-gates are of open ironwork of an ornamental character. The two gate-pillars are of considerable height and are surmounted by large globular gas-lamps, which give a finished appearance to the entrance, strongly contrasting with that already noted.

Between the married soldiers' quarters and those of the sergeants already described another block of building, corresponding in architectural features with the latter, has been erected. This includes the canteen establishment, the reading and recreation rooms, library, &c. The canteen occupies the portion of the block to the right of the main entrance. Its arrangements are carried out on the co-operative principle. The profits are divided amongst the men in proportion to the amount of purchases made by each. The canteen not only supplies ale, beer, and spirits, as was formerly the case, but also groceries, vegetables, and other necessities. The soldiers avail themselves of the advantages offered to a large extent.

The recreation-room of the main entrance is the recreation-room, with the reading-room and library over. These rooms are large and well-proportioned, being lofty, well lighted from both sides, and ventilated. The recreation-room is furnished with every convenience. There are billiard and bagatelle tables, chess and draughts, dice, dominoes, and cards.

The reading-room is over the recreation-room, and is of the same size and proportions. On entering, it presents a very pleasing appearance. On the walls are hung a variety of maps and useful diagrams, and the tables are well supplied with newspapers and periodicals. There are also provided tables, with writing materials. Artificial light is supplied in the evening by a brilliant sunlight burner near the ceiling. A small room on the same floor is devoted to the purposes of a circulating library.

There are rooms in this block for the librarian and the sergeant who has charge of the canteen. The entire block forms what may be rightly designated a soldiers' club, and as such the men avail themselves of it. Throughout the whole of the arrangements here their comfort and con-

venience have been carefully studied. The block is supplied with water from a tank containing 6,500 gallons.

The work for this part was undertaken by Messrs. Piper & Wheeler, at a cost of about 5,000 l.

On the south side of the new quadrangle, and opposite to the building now described, the main block has been erected. In this there are twelve large rooms, each being 76 ft. in length, by 22 ft. in breadth, 12 ft. high. Each room has accommodation for 24 men. It will thus be seen that for each man there is a superficial area of 70 ft., and over 800 ft. cubical space, as contrasted with 40 ft. superficial, and 400 cubical feet in the old barracks. If nothing more had been done, there would be little doubt that this alone would have very much improved the health of the troops.

The block has two principal entrances, and is three stories in height. Opposite the entrances are the staircases, and on either side, as well as on the landings above, are rooms for the twelve sergeants who have charge of the men while in barracks.

The sergeants' rooms, which measure 15 ft. by 12 ft., and 12 ft. high, are so arranged that they command a full view of the larger rooms in which the men live and sleep.

The rooms are warmed by stove grates, invented by Captain Galton, late of the Royal Engineers, and with which some of our readers are doubtless familiar. The object of the invention is that of a better utilisation of fuel and heat. This is accomplished by having an air-chamber around the back of the stove, to which pure air is admitted from without. This air, after becoming warmed in the chamber, is delivered into the room. The foul air is carried off by ventilating shafts. Each of the large rooms has two of Galton's stove grates, while each sergeant's room has one.

There are also latrine-rooms, fitted up with every convenience, latrines within the building for night use, and others outside, at the back of the block, for day use. An abundant supply of water is secured. For the water service of this block there are six slate cisterns, each capable of holding 500 gallons. In addition to these there is a large iron tank, holding 3,500 gallons. This is used principally for supplying the baths.

Along the front of the building there is a covered parade, formed of pillars and iron framework, and glazed with rough plate, the latter being protected by wirework. The erection of this block was entrusted to Messrs. Piper & Wheeler. The contract also included the erection of a new cook-house, bowling alley, and magazine, &c., the amount being from 12,000 l. to 13,000 l.

To the west of this block, and on the same side of the quadrangle, stands the magazine, and beyond this the officers' stables. At the eastern extremity is the new cook-house. In this is an oven capable of cooking rations for 200 men, and a smaller one for 100 men. There are also eight boilers, each cooking for 50 men. These boilers are supplied with water from a large tank placed immediately over them. The old block used for cooking, which stood at the north-eastern corner of the quadrangle, has been entirely removed, thus giving an uninterrupted view of the whole of the barracks buildings. Near the cook-house there are store-houses for meat, bread, vegetables, &c. The ground to the rear of this, formerly the site of the "Fire Bell" public-house, has been reserved for the erection of a new armourer's shop, fitted up with forge, bowing trough, and stands for ninety rifles. There have also been built a block for laundry purposes, with all necessary fittings, a bedding store-room, a coal-store, and other useful offices.

Previously to finishing the latter portion of this contract, the quadrangle was made complete in its buildings by the erection of the officers' quarters. These are of very handsome architectural appearance, and consist of a centre portion, flanked by square towers and two wings. The basement is well arranged as a department for the messmaster. The cooking kitchen is replete with apparatus, all of modern construction, so that there is every convenience for steaming, boiling, basting, broiling, roasting, frying, and all other operations of the culinary art. A small lift is used for passing the dishes up to the mess-room above. In connexion with the messmaster's department there are his living-rooms, and all the necessary store-rooms, offices, and wine-cellar.

The ground-floor of the block is raised about 5 ft. above the ordinary level. This adds very

much to the general effect of the façade. The centre part is used as a mess-room, and is certainly one of the handsomest in the country. On each side are entrances, reached by flights of steps, leading to the mess-rooms, the principal staircases, and the officers' private rooms. Over the mess-room, and of the same size, is the billiard-room. The block contains accommodation for twenty-two commissioned and four field officers, besides the quartermaster, who has two rooms and a kitchen. The work-supply is obtained from a tank at the rear of the building, containing 5,000 gallons. This portion of the work was contracted for by Mr. W. Higgs, the estimate being about 14,000. The work is very substantially done and well finished.

A considerable portion—about two-thirds—of the quadrangle enclosed by the buildings now described has been levelled and laid with grass turf, while the portion near the officers' quarters has been planted with evergreens. The spare ground near the wings of this block is also planted as ornamental shrubberies; the remaining portion is levelled and laid with gravel, and is used for drill and other purposes.

In the old block, the back of which now forms the eastern side of the square, and previously mentioned as containing thirty-two rooms, a considerable improvement has been made. It now accommodates, not only a much less number of men, but has undergone alterations to add to their comfort. Projecting from what is now the back of the building, four blocks of ablution-rooms have been built. These are supplied by a tank containing 5,000 gallons. The lower portion of the building, part of which was formerly the officers' mess-room, is used as a band-room and for other purposes. In the old barrack-square the guard-room, orderly-room, and engine-house have been removed, and in place of these has been erected a gymnasium.

The dimensions of this room are 80 ft. in length by 40 ft. in breadth, and some 20 ft. in height. A portion of the length (about 15 ft.) is occupied by a vestibule, on the right of which is a dressing-room, and on the left a room for gymnasium sergeant or instructor. Over these three is a gallery for spectators, with an ornamental railing in front. The gallery is reached by a staircase from the vestibule, or the lower part of the room, or by a separate entrance. The room is properly named, is well lighted with windows from both sides, and has also a large octagonal lantern in the centre, with sashes which can be lowered for ventilation. The artificial lighting is secured by six groups of gas-burners, with reflectors fixed close to the side walls, so as to be out of the way of the various athletic apparatus with which the school is filled.

This apparatus consists of a large mat, which rises from the floor to the top of the lantern. Around this is arranged a series of ropes for climbing. Some of these latter are plain, while others have knots, wood pegs, and other projections to assist the climbers. There are other ropes attached to the beams, fitted as a trapeze, and others, again, with rings for swinging. A row of each is fixed on each side of the room. A strong walking-bar, as thick as a small mat, is fixed horizontally in a strong, oak frame, in which it can be raised or lowered, and is used for teaching the men to balance themselves where only a narrow foothold can be had. On the right of the room single and double sets of climbing-poles are fixed at an angle of about 45 degrees, and similar poles hang vertically in the centre, and are in a similar way to the ropes. A strong iron rod, well supported from the roof, extends for some distance on the right, and can be used by a large number of men at one time. Beyond the climbing apparatus stand the parallel bars. Near these are the vaulting bars, moveable to various heights, in a frame.

On the left hand, and extending almost the whole length of the room, is fixed, horizontally, the elastic ladder. This consists of two wire ropes, between which are fixed staves, or rounds, at equal distances throughout its entire length. The staves are round, with square bosses at the ends, these latter being fixed firmly in brass sockets, to prevent them slipping or turning round when grasped by the hands of the gymnasts. The whole is raised some 7 ft. from the floor, and tightly stretched. On the same side are fixed two inclined planes. One of these, called the ladder plank, has spokes projecting from each side, by which the gymnast can draw himself up either with his face or his back to the board, either of which will give fine exercise for the muscles of the shoulders, arms,

and chest. The back of this can also be used for climbing with the arms alone.

The lower end of the room is occupied with a bridge-ender, extending across the room, the extremities being vertical, the centre portion forming two inclined planes, and between these are horizontal portions.

The wall at this end of the room has been prepared and fitted with apparatus for scaling purposes, such as scaling the walls of forts, etc., either by hands alone, or by means of grappling-hooks. On each side of the room are large vaulting-horses. In different parts of the room mattresses are laid on the floor.

A space is left clear at the entrance of the room for sword-practice, fencing with foils, single-sticks, as well as the use of the bayonet. There is an ample supply of boxing-gloves, mallets, cutlasses, swords, and dumb-bells. These latter range from 10 lb. to 60 lb. in weight. In addition to the ordinary dumb-bells, there are French barbells, of from 20 lb. to 60 lb.

The entire fittings of the room are as complete as the most enthusiastic athlete could desire. There can be no doubt as to the benefit in health and physical development which the men will derive from the frequent use of the means thus provided.

Some alterations have been made in the old officers' quarters, to adapt them to new purposes. One part has been fitted up with galleries, desks, &c., and is now used as an infant school, and suitable accommodation has been provided for the school-mistress. Other rooms are used by married soldiers, engineer officers, and others connected with the barrack establishment.

It only now remains to speak of the drainage. The whole of the barrack property is drained into the main sewer of the borough. For some time past plans have been discussed before the Local Board of Health with reference to a new system of drainage and means of diverting the sewage from the Thames. The conservators of the river require that it shall cease to be polluted. Surveys have been made with the view of adopting the "separate system" of Mr. Menzies. When the new ground was acquired for the extension of the barracks, it was decided to lay in drains on the "separate" plan. There are, therefore, a double set of drains; one taking the surface water or rainfall, the other the sewage proper. At present both these pour their contents into the main sewer, and are so arranged as to be separated at any time.

With all the improvements and additions we have described, not only do the Windsor Infantry Barracks form a pleasant contrast with what they once were, but the general appearance of that part of the town has been improved. It has given the authorities of the town the opportunity of opening up a wide road leading from Victoria-street to the Prince Consort's Model Cottages, which will, no doubt, be continued to All Saints' Church and France-road.

ANTHOLOGIA TECHNICA.

ANENT RATS. "Rats!" exclaims the reader: "what the deuce have rats to do with art?" A great deal, sir, every professional architect or builder knows to his annoyance and cost. However, it is with the historical instead of the building arts we speak to do this time.

Our eyes have for us. Dr. Jackson, a prebendary of St. Peter's, has just published a work for the young, entitled "Our Dumb Neighbours," with the laudable desire of implanting knowledge and kindly feeling towards animals.

A contemporary says, "Dr. Jackson remarks it is strange that no classical writer has ever mentioned rats," which, he says, first visited us from Asia in the fifteenth century.

Well, we shall prove that "rats are as historical as the Pyramids, and that architects are aware that Vitruvius has alluded to them among others. If the learned Canon, or his less erudite critic, had hunted up authorities, he would have read the "Betrachtungen" of Aristophanes. *Mus* was the generic term for rats and mice in the days of Homer, who first gave birth to the legend of the mountain labours and the mouse.

Οὐρανὸς ἄχος, Ζεὺς δ' ἰσχυρότερος, εὐδ' ἔσταν πῦρ.
(The mountain was in labour. Jupiter got frightened; but it brought forth a mouse.)

A line initiated by Horace in the 135th line of the "De Arte Poetica":—

"Parvulus montis: nascitur ridens mus."

Dr. Jackson ought surely to have known the

Latin word as *orex*, a rat, and that Colonus has written of the *Mustella Alpina*, the Alpine or mountain rat; or the *Mus Indicus*, or Egyptian rat; or the *Mus Pharusius*, the wonderful little ichneumon, which, from the time of Ptolemy down to the days of Champlain, has the credit of visiting subside the inner apartments of the sleeping crocodile, when he found the monster's door open, and killing the villainous aspidon by devouring his vitæ.

In Plautus, too, who mentions the name of a "classic writer," these words are met with,—*Torinese Naniis*, the squeal or squeak of a rat when caught in a trap; *Nemias*, in the mythology, being set down as the goddess of funerals, and by Metonymy as signifying a dirge or death-wail. And brave old Vitruvius, writing of the villas of Bais, the Roman Brighton, suffering from the inroads of the *mus ægæon*, and inviting the workmen to a grand *battus sorices inactati*, to hunt the rats, telling the *musici*, or rat-catchers, how to make a *soricum decipulum*, or rat-trap; and does not the word *musivæ*, or the more modern *musivæ*, signifying the mosaics that the ancients knew how to "smell a rat?"

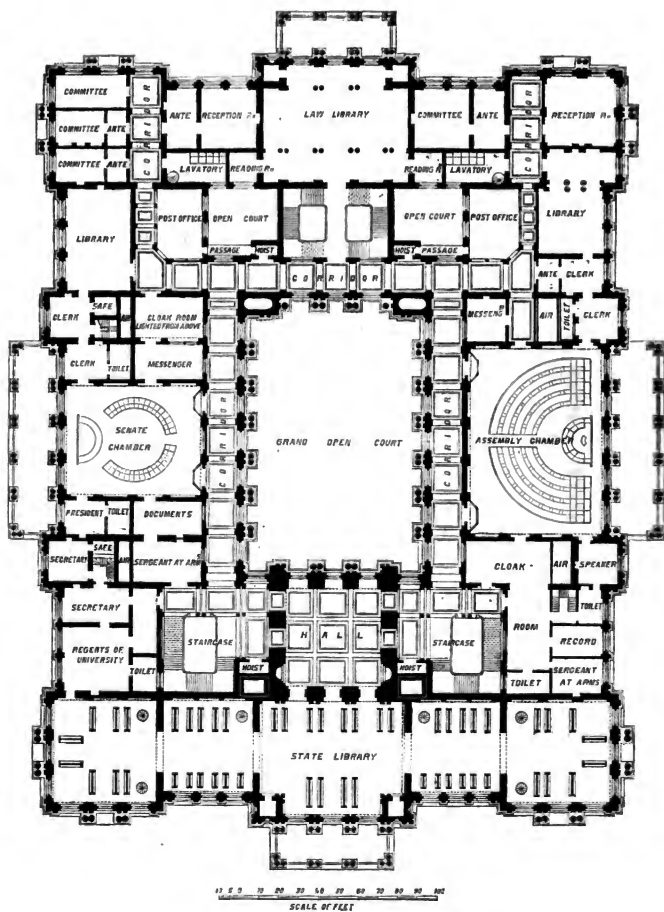
Bravo, ego! you have made out a case. When learned doctors undertake to teach the young, they ought, as a preliminary, to "read up."

Archery was once a fashionable, as well as an indispensable accomplishment in the British islands. It is not unlikely to become fashionable again, and it is a more healthy and bracing employment for the fair sex than croquet. As a military resort, it is extinguished for aye, although prior to the invention of firearms the bow was the principal *main* weapon. Its use is coeval with society. In modern times there were three forms of bows in use,—the Roman bow, the long bow, and the cross-bow. The former was about 3 ft. long, used generally on horseback, and drawn to the breast. It was the general weapon of the Scythians, after whom it was sometimes called the Scythian bow. It was also in use among Germans, Britons, and Celts (Irish). The cross-bow, or *arbalète*, was the more favourite weapon of the French. It was fixed on an axis or shaft, and was from 1 ft. to 3 ft. long. The favourite weapon of the English was the long bow, from the thirteenth to the sixteenth century. "Drawing the long bow," is a saying well understood to-day. The English were not the original inventors. The long bow was a formidable military weapon, and it is said owes its origin to the Hindoos. It came into use in Europe, perhaps, about the time of the Crusades.

The English were expert at the use of the long bow. The long bow and broad arrow played sad havoc at Agincourt and Cressy. Even after the introduction of firearms, the English had browbeaten in the flanks of their armies. By a treaty made in 1562, between the thirteenth Queen Elizabeth, 1572, the latter was obliged to furnish the former with 1,000 English archers, and in 1627 the English shot arrows into a fort, on the Isle of Rhé. After this archery became almost obsolete. Clubs or companies, however, kept the custom alive. London had its "Finsbury Archers," Dublin its "Archers' Club," and Edinburgh its "Royal Company of Archers."

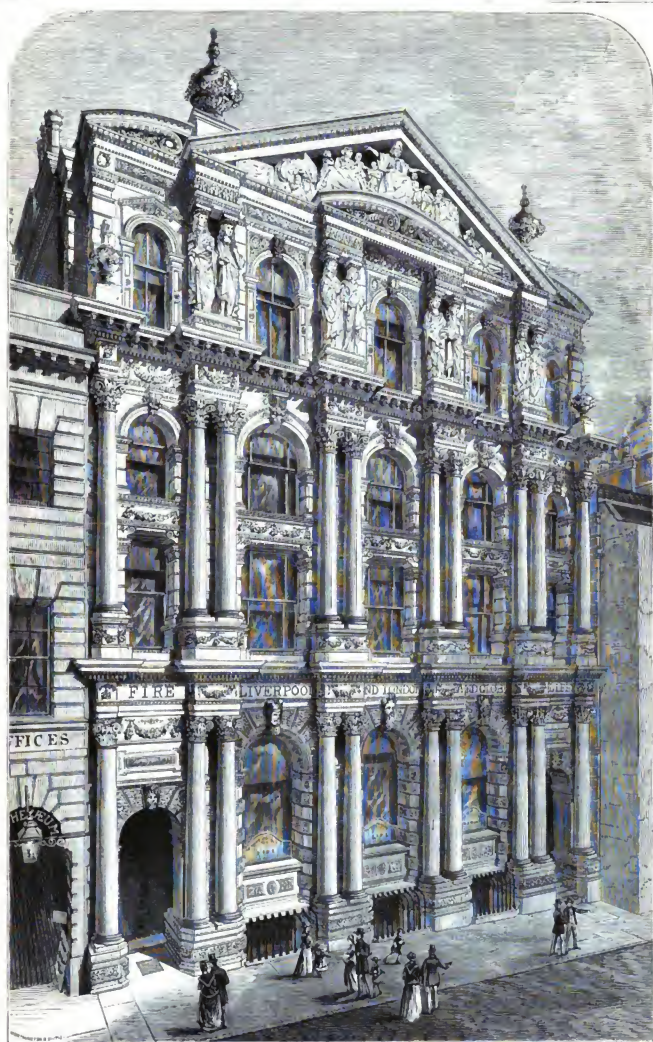
Evidences are again cropping up tending to confirm the belief that another race of people occupied the central portion of North America before the present, and that they quarried, built, and made other improvements in the construction of the arts. Now none of the Indian races have been known to mine or throw up intrenchments or to raise huge cairns or heaps of stones in commemoration of their battles. A Mr. Bartram, who was a professor in the College of Philadelphia at the close of the last century, has seen these monuments and fortifications, but he was not the first. In the *Journal des Savans* for March, 1681, are to be found statements from the memoirs of John Leder, of Hamburg, who was a resident in America for ten years, but we are not informed who this early race of the Indians were, or who inhabited America. Nor do we get any great clue or name conjecture. An anonymous writer, who also alludes to the above authors, says:—"It is probable part of the speech of these ancient people was adopted by their successors, as some people of the same name were now found in the German and Gothic tongue."

We are inclined to believe that the American continent received inhabitants from Europe long anterior to the time mentioned in our histories. The first navigators found a large population in



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MR. W. BRUCE GINGSELL, ARCHITECT.

THE PORT OF LEITH.

A SEAPORT TOWN now-a-days is the great point of departure of the sanitary economist; and there are very few in the country, if we exclude Liverpool and Glasgow, more deserving of attention and study than the port of Leith. Not so much of itself, perhaps we should admit, as its neighbourhood; for it is impossible to arrive at any correct conclusion with regard to the death-rate of Edinburgh (to which we recently devoted some space), without at the same time taking into consideration the sanitary condition of its surroundings; and with the adjacent town and seaport of Leith, the capital of Scotland has from time immemorial been associated with it. In fact, has not only excellent materials within itself for observation; but it is, and has always been, the seaport of a capital city, and during several centuries it was also the principal port of an independent kingdom.

Leith, we find, is one of the eight principal towns of Scotland which every quarter supplies, *pari passu* with Greenock, the highest death-rate in the Registrar-General's report. It has certainly possessed, for many years, the highest returns of mortality in that which is now termed the *symiotic*, or, in plainer language, the contagious and epidemic class of diseases; and in this abnormal feature of its "causes of death," it ranks higher than Dundee or Greenock, much higher than Aberdeen, and nearly twice as high as the city of Perth. We find from the last published annual report of the Registrar-General for Scotland, which relates to the year 1867, the following trustworthy particulars:—Of the eight principal towns, the mortality from the *symiotic* class of diseases was heaviest in Leith, and lightest in Perth and Aberdeen. Thus, in every 10,000 persons in each town, 25.6 died from the *symiotic* diseases during the year 1867, Leith, 36.7 in Aberdeen, 27.3 in Edinburgh, 28.7 in Greenock, 28.1 in Glasgow, 23.4 in Dundee, 27.3 in Paisley, and 70.3 in Leith. If we compare the proportion of *symiotic* deaths to the total deaths, the towns arrange themselves in nearly the same order—Perth and Aberdeen with the smallest proportional mortality, and Leith the highest. Thus in Perth, 12.16 per cent. of the deaths were caused by the *symiotic* class of diseases; in Aberdeen, 15.14 per cent. in Greenock, 19.63; in Edinburgh, 21.21; in Dundee, 21.27; in Glasgow, 22.99; in Paisley, 23.92; and in Leith, 25.98 per cent. This fact of itself is strongly suggestive of there being something wrong with its sanitary condition.

A very few words regarding the history of Leith will make our subsequent remarks more intelligible. For several centuries it was, as we have said, the only, and at least the principal, seaport town in Scotland. Its site and its name had, of course, been determined by the little river on whose banks it is situated, and divides it into two parishes, North Leith and South Leith, and which of late years has acquired such an unenviable notoriety from its extremely filthy and polluted condition. Logan of Restalrig, a fierce baron of the feudal period, held the original grant of lands, and also of the mills of Leith, under a charter of Robert the Bruce.

Leith was up to this period a strongly-fortified town (a portion of its citadel walls still exist), and from this reason it occurs that the great—the only grand incident of its history—is the celebrated siege which it sustained against the English army at that eventful period, when Smith thought it necessary to employ the force of his throne to reduce the power of the English. It was defended, as all readers of the history of Scotland know, by Mary of Guise, with the aid of French troops; but, referring our readers to Mr. Hill Burton, or, better still, to Mr. Anthony Frolde, for a minute account of this celebrated siege, we may venture to transcribe a little story from the late historian, which illustrates more pointedly than many pages of political disquisition can do the manners and customs of the contemporary warfare. There was, it will be remembered, a conference arranged between the leaders of the army for a capitulation or an evacuation—we forget which—and two sets of commissioners were appointed. The conference opened on the 17th (between the French and English commissioners) an armistice was allowed for a week, and the armies had leisure to exchange courtesies. The French and English officers met at a sort of pic-nic on Leith sands, each bringing with him such victuals as he had in store. From Grey's camp came hams, capons, chickens, wine, and beer. The French

produced a solitary fowl, a piece of baked horse, and six delicately-roasted rats. The last, they said, was the best fresh meat in the town; but of that they had abundance.*

After the accession of James to the throne of England, Leith lost its position as a fortified town; and again after the union of England and Scotland it also seems to have lost much of its importance as a seaport. In other respects it seems to have retrograded; for it was always more or less borne down and held in subjection by the city of Edinburgh, which had, by purchase, we suppose, at an early period, succeeded to the feudal superiority and inheritance of Logan. Although most of these rights have been acquired or abrogated, it is curious that Leith up to this very hour pays a sum of 2,000*l.* to the Edinburgh Presbyterian clergymen, in commutation of an ancient claim of one mark per ton, security for which is still provided for by a lien over its dock and harbour dues.

Those who wish to obtain a bird's-eye view of the port of Leith should ascend the Calton-hill of Edinburgh, take their stand under the shadow of that group of massive pillars, with their broken entablature, which seem designed to reproduce the ruins of the Parthenon, and turn their eyes to the north. Such a scene one seldom sees and never forgets. Edinburgh, we discover, is connected by an unbroken series of regularly planned although unfinished streets and buildings with the town of Leith; and the distance from centre to centre, say from the Post-office in Waterloo-place to the upper drawbridge over the harbour—may amount, as the crow flies, to something like two miles. Between the foreground and the sea a number of nurseries and market-gardens give the scene something of a rural and suburban aspect, which is greatly enhanced by the Links of Leith and the verdant meadows of Craigentinny. To the right hand lies the fashionable watering-place of Portobello, famous for its many parks and its potteries; to the left the fishing village of Newhaven, with its steeple and its stalwart and industrious fishermen.† The view is bounded on the one hand by the fertile champagne country of East Lothian, and promontory of North Berwick Law; on the other by the picturesque coast of Fife, and the sloping eminences of the Ochil hills; while the whole expanse of the middle distance is filled with the dark blue waters of the Firth of Forth, with its pretty green islands glistening on its azure bosom. We need not put in the ships at anchor, the white sails, the smoke of the steamers, the forest of masts in the docks, or the spectacle of the parish church. This last feature of the picture unfortunately does not exist. We are more concerned with a multitude of tall chimneys, gigantic glass cones, and sugar-houses and coke work furnaces, and boiler works, all of which are more or less the means of actively discharging foreign particles of matter into the surrounding atmosphere. It is a pity to find such a pleasing landscape and seapiece destroyed by accidental effects like these, which at first glance we are sure must be capable of remedy.

We shall now proceed down Leith-walk, which is the great artery of communication between the city and the seaport. The walk from Prince's-street, in Edinburgh, to the Kirkgate, in Leith, with this thoroughfare, is something like going from Regent-circus to Bagnigge Wells-road. South Leith kirk, which we pass on our right hand—a rather successful restoration of the Medieval Gothic fabric, by Mr. Hamilton (minus the spire, however), stands in the centre of a small and highly over-crowded graveyard. Next to the kirk is a churchyard, by a dense population, piled up in the tall tenements, with the inevitable common stairs, it must be highly injurious to health, and we have no hesitation in saying that it ought to be shut up without delay. As to the rest of the public buildings in Leith, we may briefly dispose of them. The townhall, which contains the council chambers and the police court, is situated at the intersection of Constitution-street and Charlotte-street, and is rather a favourable specimen of municipal archi-

tecture in Scotland, of the Greco-Italian style, so fashionable in Edinburgh fifty years ago. If, however, the expense which has been lavished on the Ionic pillars that are attached to its northern elevation had been devoted to the enlargement and improvement of its staircases, there would have been an obvious gain to the community. The assembly-rooms, of which we have only an elevation of pilasters and pediment, are now converted into mercantile offices. The corn exchange is rather a tasteless building, by Mr. Cousin, a sort of composite French and Italian design, with an octagon dome. The custom-house in North Leith, which is the best building in the port, is a solid and substantial reproduction, on a smaller scale, of its prototype in Lower Thames-street. A Presbyterian church is either above or beneath notice; and the Early English Episcopal chapel, by Mr. Gilbert Scott, has been previously noticed in our columns. The great buildings in Leith are the docks, the most recent of which, the Victoria Dock, is in every way creditable to the engineers, the contractors, and the community.

The Tolbooth-yard, in which is situated the jail of the borough, turns off at right angles from the Kirkgate towards the harbour; and is a curious irregular street, opening obliquely, and sloping downward at the same time towards the fish-quay. It contains several narrow dingy alleys, communicating with St. Andrew-street; but the nuisance here that principally attracted our attention was the smell of putrid fish proceeding from the costermongers' stalls on the quay, and from the *debris* and entrails profusely scattered around them.

Turning to the left, we looked into the interior of an ancient tenemented dwelling, which is divided into single rooms. Our visit was during the day, and most of the male inhabitants were abroad. But, judging from the number of women and children, squalid and dirty, we could not suppose that overcrowding the poorer population had reached its climax in this part of the port. The mass of disease and filth must be very great, which is concentrated in such unmistakable plague-spots. Water-closets there were none; in fact, there was no water nor soil-pipe—no water supply at all but that which was derived from the scanty and unwholesome source of the public wells. Similar instances we rapidly glanced at in the adjoining streets of the Post-head and the Cable-walk. Certainly, these were some of the worst examples of overcrowding we saw.

We now retraced our steps, and came eastward along the "shore," as it is called, or rather that ancient line of houses which overlooks the harbour, some of them dating, we believe, from the sixteenth century. We did not get on-wards on this occasion; we went down, among the cellar dwellings with which the whole street is lined. It is hardly necessary to say that they were thickly populated. Ostensibly occupied during the day as public-houses and entertainment cook-shops, they were, it cannot be doubted, during the night devoted to worse purposes. The sound of a hardy-gurdy, and a German girl's voice also grating at the ear, as we passed, among the "Sleerig Holsten," reminded us that the foreign sailor was here trying to find his hours of relaxation ashore, and led us to think with astonishment at his appetite for such enjoyment. It is gratifying to report that the sanitary inspector of the burgh is looking sharply after these hovels.

Passing on our way to Quality-street through one of these narrow dingy alleys, into which the light of the sun can never penetrate, we were forcibly and even dangerously reminded that we were at that moment in a country in which the lower class of citizens think it no disgrace to project the contents of their pails on the public roadway. Why must this horrible practice continue to exist in Scotland? Since the poor people will persist in doing "rightful things" in the eyes of the Police and Sanitary Procedure Bills, in spite of fines or even of imprisonment, could some sanitary engineer not invent a cheap form of a cast-iron trough, or "Jawbox," as they say in Glasgow, copiously supplied with water, into which they might legally and honestly discharge their pails? To be sure the surface mounds would in such a case be lost to the dung collector, but that is surely not a paramount consideration.

Quality-street, which we have incidentally mentioned, was at one period the fashionable quarter of the town, when the Leith Races, as the poet Ferguson describes them, flourished in all their glory. It is now composed chiefly of warehouses and corn-lofts; and we were speedily

* Randolph to K. H. Grey, June 25, 1561, M.S. Bells House, Edinburgh. See "History of England" (Reign of Elizabeth), vol. i., p. 254.

† Leith, Newhaven, Portobello, and the adjacent fishing village of Musselburgh, of which it was long ago said—

"Musselburgh was a burgh
When Edinburgh was none;
Musselburgh will be a burgh
When Edinburgh is gone."

These four places constitute, in Parliamentary parlance, "the Leith District of Burghs."

made conscious of the powerful effluvia of guano proceeding from one of them,—a commodity, we believe, which constitutes a staple trade of the port. Immense quantities of guano, which it is hardly necessary to explain is the decayed excrement of sea fowls, are constantly being concentrated in Leith, i.e., imported and exported; and although some people profess to say that its gases are innocuous, we are not able to share in the opinion. The buildings in Leith, we may observe, are largely composed of warehouses and lofty, chiefly constructed for purposes of storage during the régime of the corn laws; but no general provision seems to be made for their ventilation.

Before leaving the harbour we may say a word or two about the drainage of the Water of Leith, as far as our observation goes, and our inquiries support us, it has not turned out altogether successful as regards Leith. Some of our readers may remember how the public indignation was excited in Edinburgh about the state of this pretty but polluted stream. An Act of Parliament was procured and a heavy assessment levied (70,000) for the purpose of its purification. An improvement commission was appointed, as the fashion is in Scotland, with a staff of paid officials to superintend the job. Without inquiry,—without any public report at least,—and without a public competition, Messrs. Stevenson were employed to lay down a cast-iron pipe in the bed of the river, reaching from the Caledonian Distillery to the Black Rocks, a point in the channel of the estuary which is reached by the scour of the Forth. Not only is this sewage lost for ever to the adjoining meadows of Granton, but the harbour of Leith, which was the principal source of complaint, still rejoices in its filthy slimy bed, which, when the tide is out, and the sun shines, vomits forth its poisonous exhalations as bad as ever. The only good thing that can be said of this particular drainage scheme is that the distillery wash has been carried out to feed the fishes in the Forth of Forth.

But we are afraid that the whole system of sewerage in Leith is rather defective; as, indeed, we may learn from any gully-hole. Most of the main sewers, of course, are laid below the high-water level. The evil valves must therefore be defective or unattended to, and the practice seems to exist on the part of the large manufacturers, who appear to discharge without the slightest regard to consequences, their waste steam into the sewers. There is no provision for ventilation that we could hear of.

The water supply is also sadly deficient. Leith and Portobello are at this moment supplied from the same sources as Edinburgh, and are parties to the recent Act of Parliament which denudes the Joint Stock Company and vests the property in the corporations. This, we have already said, is a step in the right direction, if properly carried out. The ships moored in the docks are very well supplied, of course; but the poorer districts, as we have seen, are very ill supplied indeed; and it is precisely in these quarters where contagious diseases are constantly present in one form or another. Leith, we may add, has a small source of independent water supply in neighbouring loch, situated on the rising ground halfway between Leith and Restalrig (Lochend). But as this basin of water receives the natural drainage as well as the sewage of the districts of Norton and Mayfield in Edinburgh, the water is rendered unwholesome and unfit to drink. Therefore, some years ago, to be discontinued as a supply for the public wells, and is now, we believe, restricted in its use to the purposes of the manufactories and public works.

We may add here with pleasure that Leith is the only town in Scotland in which we have discovered public water-closets: a great step in advance, the honour of which, we believe, is due to Mr. Superintendent Grant. One or two we looked at in Storrer's-alley and Burgess-cloze seemed to be kept in proper order and cleanliness. There are still, however, some very filthy public and private privies about the shore which should be improved.

We have now pretty well exhausted our list of grievances under which the port of Leith is at present suffering; but one still remains which is, perhaps, the greatest and most important. We have said that guano, that is, the decayed excrement of sea fowls, and, therefore, a quasi-natural manure, is a staple trade of the place. We must now add that dissolved bones, an artificial manure, is also another staple. Leith, indeed, seems to be

the grand emporium of artificial manures in Scotland. Coprolites, the fossil exuvium of certain extinct species of molluscs, is imported in large quantities from the coltic beds of the Rhine and the Danube, and these are spread and constitute the profitable admixture with the genuine bones just as chaff is in the case of coffee. But, whatever it may be along the sea beach of South Leith, at Salamander-street and Tower-street are situated a range about a mile in length of chemical works. Bone-works, saw-works, manure-manufactories, and distilleries, boiler-makers, who contrive to infect the whole atmosphere with such a villanous compound of noxious gases and bad smells as baffles all ordinary language to describe. Sulphuretted hydrogen, hydro-sulphuretted ammonia, carburetted hydrogen, —the gases which proceed from decayed bones, putrid fish, boiled oil, and fried blubber,—these and a multitude of others combine to disseminate through the surrounding atmosphere an effluvia so disgusting and intolerable that it must be smelt to be understood. Had Dante lived in our day and passed through Salamander-street, he would certainly have added a chapter to his immortal work! No doubt these manufactories are profitable, and largely increase the trade of the port. But look at the sad results, the death-rate, and think of the price which the inhabitants of the port have to pay for the modern scientific manure. These curious series of old glasshouse covers, six we counted, were never built or intended for such vile uses as those to which they are put at present. Where, by the way, has the once celebrated bottle trade gone to?

We have said already to suggest inquiry and to promote progress. The irrigated meadows of Creigentin are not managed as they ought to be; and we need not stay to point out how easily in such a case a blessing may be converted into a curse. A great and irreparable blunder has also been committed by the authorities in allowing the different lines of railway that encircle the coast to approach the town at such a level as to block up, like so many boundary walls, the view from the houses which are situated near the beach, and so to destroy the amenities as well as to injure the value of the property. The macadamised roads in the suburbs are generally in a filthy condition, and the rate, the sweeping of the streets is inadequate, if we take into consideration the heavy traffic of the port. We were also informed that the lower classes more especially are notoriously intemperate in their habits, which is, however, by no means a specific characteristic of the poor people of Leith. Their food, perhaps, consists too much of stale stock fish and salt herrings.

Let us add, that we are not seeking to find fault with the local government; on the contrary, it is but fair to admit that no town in Scotland has made such large strides in the different lines of railway that encircle the coast to approach the town at such a level as to block up, like so many boundary walls, the view from the houses which are situated near the beach, and so to destroy the amenities as well as to injure the value of the property. The macadamised roads in the suburbs are generally in a filthy condition, and the rate, the sweeping of the streets is inadequate, if we take into consideration the heavy traffic of the port. We were also informed that the lower classes more especially are notoriously intemperate in their habits, which is, however, by no means a specific characteristic of the poor people of Leith. Their food, perhaps, consists too much of stale stock fish and salt herrings.

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THE LATE JOHN WOOD, PAINTER.

JOHN WOOD was born in London, on the 29th of June, 1801. His father was a man of considerable ability, was originally intended for a literary profession, but ultimately took to business. John Wood's first idea of art he probably owed to his father. At four years old he stood on a little stool by his parent's side, intently watching the sketch his father drew, and then, a man of considerable ability, was originally intended for a literary profession, but ultimately took to business.

His education was completed at Epsley, in Bedfordshire, where he was under the charge of an uncle, who was much attached to him. Love for art strengthened with his years. At school he sketched his schoolfellows, and at earliest dawn, while others were sleeping, rose to make outlines from the works of Raffaele. On leaving school, his career was for some time a dreary one. His father possessed the will but lacked the means that would have paved the way for the qualification of his son's desires; much valuable time was consequently lost before he was enabled to take a step in the right direction. At length a friend (Mr. Barnes) introduced him to Mr. Henry Sans, and in his studio he made the drawing that obtained him admittance as a probationer at the Royal Academy. Three months after he obtained his student's ticket. This was in March, 1819.

As a student he worked on zealously and enthusiastically. Medals were awarded, and he obtained the notice of Sir Thomas Lawrence, under whose auspices he made his first step in life. The Gold Medal in 1825 was the crowning reward of his student's career. From this period until about ten years previous to his death he was indefatigable in his exertions, his energy, his industry preventing him from following his occupation. His sudden effort as an exhibitor was the picture of "Adam and Eve lamenting over the dead Body of Abel," in 1823, which attracted considerable attention. This was followed by other works of great merit, and he rapidly advanced on the road to fame and independence. In 1836 he obtained the Manchester prize; in 1844, the commission to paint the Bermondsey Altar-piece, in a general competition; and, two years after, the 1,000l. premium for the "Baptism of our Saviour in the Jordan."

These prizes were honourable awards in the life of one who had fought his way in the world, and he never omitted returning thanks to Providence for these crowning results of his pencil. John Wood died unmarried. His house was kept by a beloved sister, who, during the lengthened period of his illness (close upon ten years) attended upon him with devoted affection. After a life rendered happy from being employed in a chosen pursuit, dignified by perseverance and kindness of heart, he passed away on the evening of the 19th of April last, in the sixty-ninth year of his age, dying in the house he had occupied for upwards of forty years. His productions are numerous and varied.

C. J. A.

CHURCH-BUILDING IN LEICESTER.

THE foundation-stones of two new churches, one dedicated to St. Paul and the other to St. Mark, were laid recently, with Freemasonic and religious ceremonial.

The Church of St. Paul will be situated on the Dane Hill, one of the most salubrious sites overlooking the town, on which a new colony is arising.

The site, on various trials, was found to have been previously excavated by the superficial sandstone beneath which there was no doubt had been some building for the Roman structures of the town, and subsequently filled up with debris therefrom. This has been removed to a depth varying from 8 ft. to 11 ft. (which has entailed a considerable expenditure over and above the cost required for ordinary foundations), and the basis of this structure may be materially founded upon a rock.

The superstructure will accommodate 800 persons, free. The funds have limited the operations of the founders to the building of the tower only so far as the apex of the roof. The church is to be built of Montserrat granite, block 128; making the total height nearly 800 ft. Nave, 91 ft. long by 31 ft. 4 in. wide, 38 ft. 3 in. high to nave of roof, 60 ft. high to ridge. Aisles, 83 ft. 6 in. by 17 ft., 13 ft. 10 in. high to eave,

Mr. Carlyle, in a very characteristic letter to the late Dr. R. C. Carlyle, writes in these great words: "It is as the only thing he recollects of Leith after an interval of forty years."

28 ft., 36 ft. to ridge. Chancel: 43 ft. by 29 ft. 2 in., 36 ft. high to eaves. Vestry: 18 ft. by 14 ft., by 12 ft. high. Heating-chamber beneath vestry, for the reception of warm-air apparatus, furnished and supplied by Messrs. Haden, of Trowbridge.

Messrs. Osborne have undertaken the execution of the work, comprising all the casualties, at a sum under £500.

The design was selected from a general local competition. That submitted by Mr. F. W. Ordish, of Queniborough, was selected, with whom is now associated Mr. J. C. Traylen, engaged in practically developing the work. Mr. McAlister, a resident of the town, has to see that the whole is carried out in accordance with the wishes of the committee.

St. Mark's Church has been designed to fit a site of very irregular form. In plan it consists of nave and chancel of equal width throughout, the latter terminating in a semicircular apse; north aisle of parallel width, with vestry at the eastern end; south aisle in three bays, each projecting beyond the other farther south, to meet the incline line of street boundary. The tower is at the eastern end of the south aisle, and between it and the chancel will be an organ-chamber. There are three western entrances open to a spacious vestibule entered from a porch with double western doorway, and the south aisle also opens to the tower. The length of the nave is 62 ft., its width 31 ft., and its height to the point of the arched ceiling, 53 ft. The chancel is of similar width, and equal height, and is 37 ft. 6 in. deep to the centre of the apse. The north aisle is 15 ft. wide, and the south aisle about 12 ft. in the western, and 26 ft. in the easternmost bay. The tower is 25 ft. square above the base, 79 ft. high from the pavement to top of the parapet, and thence to the top of the spire, 89 ft.

The walls of the church are to be built of slate stone from Mr. Herriock's quarries, lined internally with red brick and freestones from the Donning quarries, in Somerset. The same stone is to be used for all external dressings, and for the spire throughout. The nave is to be divided from the aisles on each side by an arcade of three arches, supported by four pillars, having shafts of polished granite, from Shap, in Westmoreland, and richly carved capitals. The arches are to be of Donning and red Mansfield stones in alternate courses. The arcade is to be surmounted by a lofty clerestory of single-light windows, enriched internally with shafts and carved capitals. The same series of windows is continued round the apse, with tracery in the lights, and with pillars of stone externally and of marble within. The nave is also lighted at the western end by a five-light window of large dimensions, and the south aisle by a lofty three-light window under each gable.

The tower is to be almost entirely plain up to the base of the bell-chamber story, but the latter is to be richly decorated, wholly open, with deeply-recessed windows of two lights each, on each of its four sides. The angle piers of this story are to be furnished with large pinnacles, surmounted by figures of the four Evangelists.

The architect is Mr. Ewan Christian, of London. The contracts for the building of both churches are in the hands of Messrs. Osborne, Brothers, stone-masons, of this town. Their foreman, Mr. W. Lindley, will carry out the plans.

Upwards of sixty masons, besides wallers and bricklayers, are engaged in the erection of the two churches.

ERECTION OF A NEW WORKHOUSE FOR PENKRIDGE.

THE Guardians of the Penkridge Union having selected a suitable site at Cannock, the new workhouse is now being erected under the direction of Mr. Edwd. Holmes, architect, of Birmingham. The general aspect of the proposed building is south. The front block has been set apart for the board offices, immediately behind which is placed the vagrants' and receiving wards. The main block of the building runs parallel with the board offices. The dining-hall and also the kitchen-offices communicate with the main building and schools by means of corridors. The general school, boys' day-room, and play-ground are on the right of the dining-hall, while the girls' are on the left. Spacious dormitories are arranged on the first floor of this building. The infirmary, comprising the sick wards, occupies the western portion of the site, and the fever wards, which are also a detached building, are placed on the north end

of the site. The accommodation provided in the main building is for 47 infirm and aged males and 10 able-bodied males, making a total of 57 males; and for 39 infirm and aged females and 20 able-bodied,—total, 59 females. The dining-hall is 38 ft. by 24 ft. 6 in., and will be arranged so that each class of adults as well as children may assemble without mixing; a division on the chapel will separate the males from the females. It is intended to use the dining-hall as a central school. Schools are provided for 24 boys and 31 girls and infants. The accommodation provided for in the infirmary is as follows:—Males, sick, 9; itch, 4; fever, 4; total, 17; females, sick, 5; itch, 4; lying-in, 4; fever, 4; total, 17. The method adopted for ventilating the building is by the use of air-bricks covered on the inside with finely perforated zinc, to be inserted at distances of from 8 ft. to 10 ft. apart near the floor level, and over them near the ceiling, except where the rooms are ceiled above the wall-plates, in which case circular ventilators, 10 in. diameter, will be placed in the ceiling and covered on the under-side with perforated zinc. Louvres will also be provided in the roof. The building will be constructed of brick with slate dressings. The estimated cost is £745*l.* Messrs. Farnell & Son, of Rugby, are the builders.

STAGNANT LINCOLN.

If some respects, there is not a more delightful city out of England than Lincoln is, not to live in. It may be divided into two parts, High Lincoln and Low Lincoln, or Lindum and Lincoln. The upper portion, in which stands that glorious monument of Medieval architecture the cathedral, is not, in another sense of the word, the highest; but the dwellers there have important advantages over their neighbours beneath, who form the majority. This is situated on a fan which has been rendered comparatively dry by numerous dykes, filled with stagnant water, in which the sewage, or rather refuse, of the whole city, of some 27,000 inhabitants, ferments, and fills the atmosphere with "a most ancient and fish-like smell." How such an abominable stench can be tolerated for even a day in this year of grace 1870 is a mystery to every one whose residence is not wholly confined to Lincoln. It may not be unhealthful for such, who appear to thrive as, it is said, a certain domestic animal, not altogether unknown to Lincolnshire farmers, does; but, to say the least, it is not refined. There is, nevertheless, a local board and an inspector of nuisances; but what substantial thing that they have yet accomplished is not recorded. Hence to purify the air of such a flat and swampy place is, doubtless, a difficult problem to solve; this, however, does not justify no action in the matter. It may arise from a deplorable apathy or from a miserable spirit of economy.

It is not upon this particular subject alone that no desire to progress with the age is evinced, and things are tolerated with a spirit of patient forbearance that can scarcely be paralleled by any city of equal importance in England. To show how benighted and wrapped up in administering to the wants of the inner man, I need but say that that great organ of progress and enlightened civilisation the *Builder* is scarcely known, and there are barely five hundred dailies sold that hail from the metropolis, and these do not reach Lincoln till London is devouring its evening papers; yet the distance between the cities could be travelled with ease in three hours and a half. Situated in the centre of the finest agricultural and, at the same time, one of the wealthiest and most flourishing counties in England, containing thirty-five market towns, this is remarkable, and naturally leads to speculation as to the enlightenment of its subordinate towns. On market days almost every carrier's cart pours in as may be seen at the Old Bailey, and the streets are so thronged with gaping bumpkins, in their "Sunday-go-to-meeting clothes," that they are quite unpassable.

The High-street is a noble street, and only wants better architecture, and a row of trees,—which would tend to purify the air,—planted, and a continual stream of clean water from the river Witham, running down the east and west channel, to make it "a thing of beauty." There appears to be almost an aversion to anything sybaritic or floral; and the paucity of trees where

For "laser," read *osier*: a common mistake.—E.

they naturally would flourish is calculated to make a worshipper of Nature in her pristine beauty weep. So that the gastronomic organs be well supplied with work, John Bull,—Punch's typical J. B. abounds,—does not care what his olfactory organs and the senses which raise man above his fellow-creatures undergo. If there be any flower at all in his garden, it is sure to be a cauliflower. There is one refining bant where Londoners are wont to regale their souls that Lincoln would do well to notice; this is Battersea Park, so recently converted from a swamp to a well-arranged semi-tropical garden. No place offers greater facilities than Lincoln for the formation of a similar delightful resort.

It is not likely that a people who entertain so small a regard for the beauties of nature have much for those of art, oil-paints being the nearest approach to anything likely to be seen at Burlington House, and a windmill the only instrument that essays the inspirations of Mendelssohn, Verdi, or Offenbach. It cannot, however, be said that the Lincolnians are less moral or straitlaced than the inhabitants of other cathedral towns; but it must be admitted by the rapidly-increasing population, and the abundance of well-fed and clad pledges of affection, that the doctrine of Malthus is not much considered. In fact, it is incumbent upon the authorities to prepare for a large population, and not to shun a progression that may touch the rate-payers' pockets directly, to save them indirectly in the shape of doctors' bills, and inability to compete with their fellows. GARGOYLE.

MUSIC.

At a concert given by Mr. Henry Lahee in the Hanover-square Rooms on Monday last his cantata, "The Building of the Ship," was performed for the first time in public, the vocalist being Miss Edith Wynne, Miss Julia Elton, Miss Emily Spiller, Mr. E. Lloyd, and Mr. Winn, with 100 selected voices of the Tonic Sol-Fa Association as chorus, and the direction of Mr. Proodman. Longfellow's fine poem,—the poem in which he urges that—

"The heart
Giveth grace unto every art,"
and adds—

"It is the heart and not the brain
That to the highest does attain,"—

is known to most of our readers; and when we say that the music is worthy of the words, they will know it is not slight praise. We have no hesitation in asserting that this cantata is a work of very high merit, and places the composer in the front rank of his profession. A song to Marlowe's well-known words from "The Passionate Shepherd,"—

"Come, live with me and be my love,"

and a part-song, "The Thresher," were other excellent specimens of Mr. Lahee's ability that were set forth on this occasion. Miss Emily Spiller is a very promising young contralto. The concert was altogether a success.

REPAIR OF ST. ANDREW'S SPIRE, WORCESTER.

THE height of the tower and spire in St. Andrew's, Worcester, is 245 ft. 6 in. Some repairs at the summit being requisite, Mr. George Friit, of Coventry, builder, who recently repaired a spire at Hereford by simple and inexpensive means, has been employed in the case also, as in climbing he has been hindered. Standing in Pain's meadow, he flew a kite carrying a holding string, which was so maneuvered as to be securely passed over the top stone of the spire and round the rod which supports the weather-cock. To the thin kite-line was then attached one somewhat thicker, which was drawn over and substituted, in its turn to give place to a rope something under an inch thick. To this rope was heaved a block, through which another rope of similar thickness was drawn; and, the block having been raised to the top, and the rope to which it was attached crossed tightly round the spire and securely fastened, the other hanging by the tapering sides of the spire, formed the means by which the adventurous climber reached the top. From one part of this was suspended, by means of cords passed through the four corners, a small piece of board, just large enough to form a seat; and to the rope on the other side of the block were fastened several large weights, 12 stones in all. The

space between the seat, or carriage, and the weights was just about the entire height of the spire; and, the purpose of the weights being to form a counterpoise, when the carriage was up the weights were down, and vice versa. The ascent did not occupy more than a minute, being accomplished with the greatest ease. In the ascent, Frick kept himself from the wall with his feet by a walk-like motion. Arrived at the top, he left his seat and stood on the top stone, upon which the crowds below burst into a loud cheer. "Steeple Jack" answered the cheer from aloft, after which he took off the weather-cock, examined, and replaced it. He then resumed his seat, and, having lowered himself sufficiently, swung himself partially round the spire to the place where a defect existed in the lightning conductor. Here he satisfied himself as to what would be necessary, and forthwith descended to terra firma to get it. The conductor, he discovered, had been all but severed in firing it. A careless workman had driven a staple almost through it; and the wonder is, not that it broke, but that it held together so long. Later in the afternoon this was spliced, a copper tube being passed over to render another severance impossible, and next day portions of defective stonework were also repaired.

BUILDERS' BENEVOLENT INSTITUTION.

A GENERAL MEETING of the subscribers and friends to this charity was held on Thursday (26th ult.), at Willis's Rooms, King-street, St. James's, to elect two possumers on the funds,—one male and one female,—from a list of twelve candidates. The chair was taken by Mr. J. M. Macey, the president.

The chairman referred to the condition of the funds, which then enabled them only to elect two possumers, from a list of twelve candidates. He was aware that many builders and persons connected with the building trade did not subscribe to the institution, which he thought might be owing to the general depression of trade. He trusted that in future there would be increased subscriptions, so that a greater number of candidates might become recipients of the benefits of the institution.

The poll was then proceeded with, and at its close the following were declared duly elected:—Richard Burdett and Martha A. Martin.

On the motion of Mr. Simpson, seconded by Mr. Thors, a vote of thanks was accorded to Mr. Cosens and Mr. Birlings, scrutineers.

Mr. Joseph Bird addressed the unsuccessful candidates, and urged them not to relax their efforts in obtaining as many votes as possible for the next election, when he hoped the subscriptions would have greatly increased. The candidates must at length be elected, and their votes were brought forward from time to time.

THE MULTIPLICATION OF ARCHITECTURAL STYLES.

Sir,—Your number for May 21st contains strictures on an extremely Bionian case of architectural criticism on the part of a contemporary. May I venture to suggest, that such a state of public ignorance as permits the crude writing in question to pass muster, is in some degree due to the latitudinarianism indulged in by architects themselves in respect of style of architecture? Half a century ago, a sort of summary law virtually prevailing, hindered architects from wilfully mixing together Chinese architecture with Greek, or Gothic with Italian; and under this state of things it became possible for persons of moderately liberal education to acquire a few architectural terms, and apply them without talking nonsense. The Oracle of the drawing-room could pronounce a portico to be Ionic, in a sonorous voice, and without circumspection. In the present day, he is afraid of being tripped up when he draws a distinction, and so omits architecture from the list of his topics.

The claim which an art has to the regard of men of general, as opposed to technical, education is, its association with history and with literature,—Greek architecture with Plato and Socrates; Roman, with the Augustan era; Gothic, with chivalry, and also with chivalry; Elizabethan, with Bacon and Shakespeare; red brick walls and Palladian dressings, with Pope and Addison; &c. But, if an architect says, "I care not for all these associations: my works are Victorian, and nothing else: if I use Roman

or Gothic details, I think no more of their origin than Dr. Johnson thought of Queen Eleanor when he spoke of Charing-cross;"—in this case the public revenge will be taken upon the art, by consigning its details to an equivalent position with the details of modern dress: to Dux collars, Siphonia overcoats, and Sydenham trousers.

"How much a year does your house cost you in taxes, and in what style does your architecture lie, I built?" asks the friend after dinner. Answers the host, annoyed at the familiarity, "I only think once of the taxes, and that is when I pay them; and, as to style, my fellow of an architect confounded all my notions of geography and chronology with his combinations of terms;" and added, "freely, by way of finish." "So I suppose that I and my house are altogether in the 'freely treated style.'" G. M.

MODEST!

Sir,—In *The Church Builder* I find a communication from Mr. J. H. Parker, Hon. M.A., on the subject of "Concrete Construction," wherein he says:—"I gave a lecture on this subject to the Royal Institute of British Architects some years since, and I am told, that since that time concrete walls and Portland cement (which is the same thing as the old Roman cement [senseless] or Roman mortar) has come into much more general use. The principle was not understood by many of the architects until I explained it to them." This is said of the body who had printed your own *Essay on Concrete* years before. A cooler piece of impertinence I have not read for some time. When the Institute made Mr. Parker an Honorary Member, was it for thus enlightening them? I shall be tempted to believe that what his Holiness the Pope said of Mr. Parker, the other day, was true.

AN OLD FELLOW.

RESTORATION OF CHESTER CATHEDRAL.

FROM the second annual report of the committee, the restoration of the cathedral appears to be progressing satisfactorily. Much time and money have necessarily been spent in underpinning the whole of the western part of the fabric, but this work has been completed from transept to transept, the choir and the lady chapel having thereby been rendered secure. Considerable progress has been made, especially in the lady chapel, the designs for the gable and roof of which were carried out without delay. The restoration of the choir and the choir has also been carried out to completion, and the aisle of the choir will be immediately commenced. Meanwhile the south wall of the aisle is approaching completion. The central tower will be fully restored in the course of the summer, and already the decoration of its upper part is coming to view. It is hoped to bring out more fully the sound of the tower bells. This is included in Mr. Thompson's contract, which also comprises the restoration of the whole south side and west end of the nave, which are gradually advancing, together with the lower stages of the unfinished south-western tower and the south porch, which abuts upon it. There is to be a new roof to the nave, and this has been determined, while the scaffolding is in its place, to proceed with the groining of the nave and its south aisle. It has been determined to raise a special fund of 5,000*l.* for the purpose. The balance in the bank at the end of the past year was about 35,000*l.*; and though, at the end of March, the amount in hand had risen to about 11,000*l.*, the augmentation was chiefly due to the 5,000*l.*, which were received from the Ecclesiastical Commissioners.

WEDNESFIELD CHURCH, NEAR WOLVERHAMPTON.

At Lichfield, on Saturday week, the Chancellor of the Diocese gave judgment in an application by the Rev. W. Stephens, incumbent of Wednesfield, for a faculty for the repair and alleged improvements of the church; and also for sanction for alterations and repairs he had caused to be made. He was represented by his proctor, Mr. Hodgson, and by Mr. Glina, the proctor of Mr. Bradburn, churchwarden, and certain other parishioners. The opposition opposed internal alterations until the fabric itself, and especially the churchyard wall, was put into a thorough

state of repair. The decision of the Chancellor was as follows:—1. That the chancel remain as it now is. 2. That the organ and choir be placed in the west gallery. 3. That the font be removed to the west end of the church. 4. That the coals be removed from the north-east porch of the said church, and that it be used hereafter for the entrance and exit of the congregation. 5. That the action on the part of the churchwardens be dismissed as before. 6. That the present stoves be removed from the centre aisle, and the church be heated by hot-air apparatus. 7. That the pulpit and reading desk be placed in the most suitable position for hearing and seeing according to the decision of a vestry meeting to be called for the purpose of deciding that question. 8. That the churchwardens be called upon to repair the churchyard wall, but that such repairs do not require the authority of a faculty. The judge condemned Hodgson's parties in the sum of 30*l.*, *nomine expensarum* of the contentious case of Glina's parties. Hodgson protested of grievance to his parties, and gave notice of appeal to the Archdeacon.

CHURCH BUILDING IN THE ORKNEYS, &c.

EFFORTS are now being made to secure for this northern island district, church and school accommodation for the poor Roman Catholic population. There is neither a chapel nor a school for them. At Thurso, in Caithness, on the main land of the north of Scotland, it is the same. At Wick, through the labours, donations, and collections of the poor Irish labouring population and others, a small chapel-house with school, has recently been erected. This is said to be the first since the days of John Knox. For want of funds the church remains without furniture.

The poor immigrant Irish have, during the last half century, built nearly all the Roman Catholic chapels and schools in Scotland, by their subscriptions and collections; but the Scottish clergy, as a body, are slow to acknowledge the fact. As soon as the mission of the Orkneys is established, there is no doubt but the Norwegian Missionary Apostolic, now labouring with might and main, will have to give way to a now-fledged student from the college of Hiale, or for a native of Kierie or Banff.

AN ECHO FROM ORKNEY.

RAILWAY MATTERS.

THE extension of the Metropolitan District line from Westminster to Blackfriars was opened for passenger traffic on Monday morning. The line, of course, in a state of complete efficiency, but much work yet requires to be done before the stations at Hangerford, the Temple, and Blackfriars will be thoroughly fitted for use. At all the Embankment stations there will be entrances from the Strand and the river esplanade. There will be train service at short intervals from early morning until near midnight.

Proposed Mansion House Station.—The Committee of the House of Lords have decided on the Bill as follows:—

"The Committee have given very anxious attention to this Bill, and have listened with all attention to the arguments advanced for and against it by the learned counsel on either side. They are of opinion that the Bill is so framed that they will not sanction that portion of the Bill which authorizes the construction of the railway from Broad-street to the Mansion House. With respect to the Metropolitan Railway Bill, the Committee will not consent to the abandonment of the railway extension from Aldgate to Finsbury-square, but they are prepared to recommend that there should be an extension of time, if it is desired, for the completion of the works."

The little line of narrow railway running between Finsbury and Treadwell, North Wales, with its 12 miles of line, the little *Wales* is likely to earn for themselves a wide repute. The length of the line is only 13 miles, with a gauge somewhat under 2 ft., and the miniature "Fairlie" engine, although so diminutive in size, is equal to 440 tons of load, and of running at 15 miles an hour. The purchase of the locomotive wheel base is 4 ft. 6 in. Mr. Fairlie, C.E., who has introduced this cheap system of railways into England, was sent for to St. Petersburg, to explain to the Emperor all the working details of this model line, and the Emperor issued a commission, with Prince Bobrowsky as its president, to visit this country, and personally inspect and report upon the working details of this model line. The inspection took place on February 11th, in the presence of the Duke of Sutherland, and the representatives of all the Continental powers. The experiments were so

satisfactory, that four lines of narrow-gauge, 12 yards in length, have been ordered to be made in Russia, and Messrs. Sharp & Stewart, of Manchester, have received the order for the engines. Thus, a little line of Welsh railway has set an example to Russia as to the construction of cheap narrow-gauge lines, which will doubtless be followed by India and other countries, where great distances are to be travelled.

WATER GLASS FOR WALLS.

Sir.—Permit me to inquire, as one of your subscribers, in reference to water-glass as a preventive of moisture in walls. In the *Journal of the Society of Arts*, 1867, was an article about it, apparently recommending its use, and I wish to ask whether experience has proved it to be efficient and lasting. I am building a hospital, and desire to make the walls impervious to moisture and non-absorbent of exhalations peculiar to the atmosphere of a hospital. Our walls are usually "plastered" with a good quality of lime and sand mortar, and finished with a coating of plaster of Paris; upon this I propose to use water-glass, if it can be recommended.

New York.

L. A. S. PRITCHER.

SWANSEA WATERWORKS.

With reference to some particulars recently quoted in our pages, at the request of inhabitants of Swansea, from the *Cavendish*, we are asked to print the following from the same journal, and most willingly comply:—

"The *New Waterworks*.—In an article in reference to the leakage at the New Waterworks, in our issue of the 13th inst., we inadvertently stated that the new works were carried out under the immediate supervision of Mr. M. Cousins, the resident engineer of the borough. We very much regret that we should have fallen into such an error, but regret still more to find that this statement has been copied into the *Builder* and other metropolitan papers, and comments made therefrom reflecting unfavorably upon the professional conduct of Mr. Cousins. We need not say that we had no desire to unduly reflect upon the skill and attention of our surveyor.—The only inference intended, and the only inference which we believe the public drew from the article, was that, notwithstanding the great care taken in the examination of the works (they being supervised by those who were competent to do so), we were justly pained, so great a leakage now exists. How, or whether, such an inference has been drawn, we do not know, but we are before satisfied, we regret the error which we inadvertently committed. Mr. Cousins had nothing whatever to do with the new waterworks, and consequently cannot be held in any way responsible for the leakage. Doubtless, the *Builder* and other metropolitan papers which copied our statement, will so readily rectify the error, that we need not thus remove any false impression which arose therefrom as to the professional regulation of our surveyor."

WINDOW FRAMES AND THE BUILDING ACT.

Sir.—I doubt whether many of your readers will consider the defense set up by Mr. P. Power in his evidence before the Building Act relative to sash-frame quite satisfactory.

Those who have given the question their serious attention know full well that the reasons he places on record for its retention vanish directly the following facts are stated:—That the clause is so worded as to relate to the jamb for the frame, and that it does not compel us to keep the frame flush with the reveal.

It is impossible to understand how the new setting back 4 in. can prevent the frame, in case of fire, from falling outwards; and it is equally impossible to understand how the provision prevents the spread of fire, when it allows the exposure of nearly any quantity of sash-woodwork, provided it is in the required recess.

With Mr. Gundry, I think the clause might be modified so as to be a really potent guard against accident, such, at the same time, not to deprive construction of one of its greatest charms.

Shortly after the Great Fire, when houses such as those still standing in Cheyne Row were built, sashes and panes were treated as setoffs for glass; but in these days of everybody lecturing everybody on the principles of fire, they rarely rise above the level of jokes in the street. But are we not living in the age of burlesque?

J. O. F. BARTLEY.

LICENSES FEES FOR HOARDING.

THE LANC & THE COMMISSIONERS OF NEWN FOR THE CITY OF LONDON.

THIS was an application (Court of Queen's Bench, Westminster) on the part of Mr. Pinner, the contractor for the new buildings at the General Post-office (St. Martin's Lane), in the City, for a *warrant* to compel the Commissioners of Newn to grant a license to erect a hoarding on the site of the proposed buildings, according to the conditions of the local Acts, which, he contended, they had refused, by imposing upon him the same when he had no right to require. These conditions were that the license should be only for two months; that separate licenses should be taken out for each of the new buildings; that 10s. should be paid for each; and that no placards or advertisements should be put up on the hoardings. To these conditions he objected, especially to the first, as the contract being for works which would occupy two years in its execution.

Mr. Mellish, Q.C., and Mr. J. Raymond, were for the applicant; Mr. J. Brown, Q.C., was for the Commissioners.

The Court, after some discussion, were of opinion that the limitation in point of time was unreasonable, and they held that the other conditions were not binding, except as to payment, were not authorized by the statute; and that, therefore, the applicant would be entitled to be allowed to put up the hoarding as he required.

CAMBERWELL CHARITY ESTATE COMPETITION.

Sir.—Will you kindly insert in your next issue the following copy of a letter which I have sent to the *Camberwell Vestry*, in the interest of all who have engaged in this competition?

GEO. GOUN.

"The *Builder* of to-day contains a notice of a competition by Mr. Dewey, stating that 'the design sent by the late Surveyor to the Charity has been pronounced the best.'"

As one of the competitors, I have often applied at the *Vestry Hall* for information relative to the competition, but without effect, until the last occasion, when I was informed that the names of some of the competitors having ceased, and the committee being therefore unable to agree, it had been determined to refer the decision on the plans to the *Vestry Surveyor*.

I understood that the terms 'Surveyor to the Charity' and 'Vestry Surveyor' are synonymous; and as it would be manifest favoritism to entrust a competitor to decide upon the designs, I sincerely hope that the facts of the case have been misrepresented; and that, in justice to all who have devoted time and money to this competition, you will appoint some disinterested member of the profession to report on the plans, and leave the awards in his hands, or, alternatively, that you leave the competitors to decide the matter by individually voting for a specified number of the plans submitted, and that the premiums may be awarded to the designs obtaining the greatest number of votes.

I have sent a copy of this letter to the editor of the *Builder*, requesting him to insert it in his next issue.

ARCHITECTS' ACTIONS.

Sir.—The suit brought before the *Master of the Rolls* in April last was with the view to determine the nature of the charges to be made by a *Surveyor* in respect of the affirming it to be one of partnership, the defendant denying it. The result proved the plaintiff was right.

It is a new and a good rule, and as it appears from the defendant's letter, which appeared in your issue of the 21st inst., that the decision of the *Master of the Rolls* satisfying both parties.

THE FLETCHER.

OWNERSHIP OF ARCHITECTS' DRAWINGS.

NORTHERN ARCHITECTURAL ASSOCIATION.

At the quarterly meeting of this society the following resolution was passed:—"That the universal custom in the north of England has been for the architect to retain the drawings, and all other plans necessary for affording a complete knowledge of a building, to belong to the architect; and the plans to be retained by him on the completion of the work." The president stated that on the 15th of April, 1861, the association adopted a scale of professional charges, and a note was printed with the charges to the effect that the copyright of designs and drawings was in all cases the property of the architect. It was resolved that a copy of this note should be forwarded to the Institute with the resolution.

ANCIENT LIGHTS.

NEW BUILDING ACT.

It is greatly to be desired that some few clauses should be inserted in the new act now contemplated to define and restrict the laws of ancient lights in London. In so vast and crowded a city there ought to be special regulations which, on the one hand, would prevent men injuring, annoying, or encroaching on their neighbours by overgrown buildings; and on the other, would afford them the means of obtaining and commodious structures without vexatious restrictions. When Sir William Tetley and others bought up the India House, and constructed upon the site the present fine block of offices, an action was brought against them by the owner of a house on the opposite side of Leadenhall Street, for obstructing such a view by means of the new buildings being some dozen feet, perhaps more, loftier than the low-browed edifice they supplanted.

Now, without going into all the merits of that particular case, it appears to us unreasonable and outrageous that from the opposite side of a principal thoroughfare, a building such as that should be set up. In the first place, the new buildings are only of the average height of houses in the City; and cannot be attacked as overgrown, or out of rule. In the second place, they left much more than space enough to strike an angle of 45 degrees from the front-door steps to the opposite side. From Broad Street, for instance, the City streets are less than 30 ft. broad, and here was a street 35 ft. to 40 ft. wide. To deny handsome buildings in a main thoroughfare of that class is to deny them altogether. If we remember, an injunction was obtained to stop the building of another house or warehouse some years ago, in a good thoroughfare in or near

Upper East Smithfield, upon a similar objection. Any clause in the new Act might reasonably apply to controlling the erection of very lofty buildings, back to back, within a few feet of each other.

And a second regulation in the new Act might justly be the graduation of heights of buildings in narrow lanes. These two subjects would work together. We see with pleasure that clauses are already introduced to limit the height of buildings, but think they might be improved by a little extra thought.

H. & B. POWELL.

CHURCH-BUILDING NEWS.

Langwillo.—The old parish church has been replaced by a new edifice, which has been opened for divine service. The new church has been built from designs furnished by Mr. Middleton, of Cheltenham, who is also the architect of the church that is now being rebuilt at Cenneth. The carpenter's work was done by Mr. D. Davies, of Llangwyllog; and Mr. D. Thomas, of Penrhiliw, did the masonry. The work throughout has been supervised by Mr. J. Bees, of Llangwillo, the churchwarden. The carving and coloured decorations will cost 150l.; and the entire cost of the building, we believe, will be about 1,800l. The church is built upon the site of the old fabric, and is very nearly of the same dimensions. The style is Ecclesiastical Revival. The edifice will accommodate about 500 persons. The walls are lined with red brick and Bath-stone bands, relieved with ornamental patterns of red and white brick. The seats are open, and of pick pine, with white deal panels.

Little Cambridge.—The restoration of the church of St. Mary in this town, having been completed, it has been re-opened for public worship. The chancel, the foundation of which had given way during the extremely dry season of 1868, has been entirely rebuilt, and a three-light window inserted in the east end. The church has been refitted and fitted up with open seats. By the liberality of Mr. W. T. Allen, of Little Cambridge Hall, two new windows have been placed in the north and south sides of the nave, and we are informed that it is the purpose of the same gentleman to place a new window of stained glass in the west end wall as soon as it can be prepared.

High Ham.—The re-opening of the ancient church of High Ham, after restoration, has taken place. The work just performed has been strictly that of restoration rather than embellishment. The whole of the roof and ancient benches have been restored, and the remainder of the church refitted and refitted. The internal stonework has been cleaned and repaired, and the walls replastered. The architect from whose plans the work has been executed is Mr. Wood, of Bristol, and the contractor Mr. B. Gillett, of Langport.

Peterchurch (Hereford).—The parish church of Peterchurch has been re-opened by the Bishop of Hereford, after repairs and restoration which have cost about 1,500l. This church was in a very dilapidated condition, but it is an interesting example of Early Norman architecture. The walls, externally and internally, have been cleaned and pointed; new stone copings and new benches have been built over the apex and channel archways; and the old stone tiles replaced with Broomley tiles. In the south wall of the nave, which has been rebuilt, a new two-light window has been added to admit light, as the eleven Norman slit windows throughout the church admit but little. The Norman doorway was also repaired in the same position in this wall. The old galleries and seating have been removed, and the three chancel arches internally for the most part rebuilt. Considerable additions have been made to the stonework generally. A new pulpit placed in the south-east angle of the nave, and new gates erected in the churchyard. The nave and apse roofs are new, the others repaired. All these roofs, now opened, were celled and whitewashed. The seats are new throughout the church. The gateways have been paved with tiles, and the church heated. Some further restoration is contemplated to the spire and tower, and porch, when the work permits. The architect, Mr. Thomas Edgar Williams, of London, was the architect employed; and Messrs. Lewis & Day, of Hereford, the contractors.

Clanfield.—The ancient parish church of Clanfield has been re-opened for divine service. In removing the walls, several curious relics of the ancient building were brought to light, including a small unglazed window in the outer

wall of the north transept, corresponding with another in the channel wall, so as to enable lepers to see and hear from without portions of the service, without the necessity of passing within the church. With the exception of the plain square tower, every portion of the church has been rebuilt, the opportunity being taken to enlarge it considerably. The chancel has been erected at the cost of about 2001, borne by the lay rectors, Captain J. E. Elliott, and Mr. W. Collett. The greater portion of the cost of the remainder of the work, about 1,000l., had been raised before the re-opening. The architect was Mr. J. Luker, of Southend, whose designs have been carried out by Mr. E. Smith, of Highworth, and Mr. H. J. Clineb, of Charlton-on-Otmoor, the last-named having undertaken the carpentering. The walls have been built of Brice-Norton stone, with freestone dressings. In the nave the wall stones have been faced and pointed; but in the chancel they are simply picked out and pointed. In all cases the old materials have been supplemented by stone of the same description. The chancel arch is nearly double the height of the old one. The north aisle has been reduced and deepened, so as to afford additional area in the nave. An old gallery which obstructed the west end has been removed, and the lower thrown open to the church, revealing the west window, which, like that of the chancel window, is of three lights. The high and close pews have given place to low open ones; and the sitting accommodation, by this means and the enlargements, nearly doubled. The entrance porch has also been made more spacious. The roofing of the interior of the church is of polished wood, with plastered pannels.

Fitzrovia.—Christ Church has been repaired after enlargement. The alterations comprise an extension to the westward, over which a gallery has been erected, capable of holding about 400 persons. The organ has been removed to the chancel. The floor has been raised with ornamental tiles, and new gas standards have replaced the old ones. The old porch on the south side has been removed to the north, and a new one erected in its place. A tower has been commenced. The building will now hold 1,150 people, a third of whom may occupy free seats. The expense of the alteration will be about 2,700l., of which sum 1,600l. have been obtained.

Chiddingfold.—Progress has been made in the restoration and enlargement of the parish church, and a large increase of seat accommodation has been effected; but the cost of these important and necessary works will exceed 3,000l., and the proposed sum of 1,000l., which is necessary to make up the required 1,000l.

Lacey.—The church here has been restored and re-opened. The north aisle, above the foundation, is entirely new, the cost of which is defrayed by Mr. Geo. Brooks, a resident of the parish. The chancel arch is also new, and is the gift of Miss Bell. The nave and chancel, which formerly had low ceilings, have been covered with new open roofs of stained pine. The chancel, vestry, and south porch are new, the south porch being erected at the expense of Miss Brooks, the ancient arch of the porch being retained. In fact, all those portions of the church which are in need of preservation, it is said, have been preserved. A painted glass window has been placed in the north aisle, by Mr. Wm. Heoford Dumbey, in memory of a member of his wife's family: the subject is Christ blessing little children. In the south wall of the nave is a painted window representing the four prophets, Isaiah, Jeremiah, Ezekiel, and Daniel, with inscription, in memory of Mr. William Brooks. There is also in the same wall, on the east side of the porch, a small Norman window, on the painted glass of which is represented St. Margaret, the patron saint of the church. The little window had been blocked up, but is restored. On the former side of the porch has been added a corresponding window representing St. John the Baptist. The old octagonal font is remodelled. The tower has been newly floored and the bells re-hung. There are three bells. The great bell has the following inscription: "I was given to the church of Lacey, 1712." The second bell is dedicated to St. Mary of Hawarday, and has the inscription, "Mary of Hawarday, of us have mercy." The third bell is inscribed, "Ista campana fit in honore sancti Augustini." Both of the latter are of the pre-

reformation period. The church is heated with hot air. The architect employed was Mr. James Fowler, of Louth; and the contractor, Mr. Wm. Worth, of Louth.

Whitfield.—The new parish church of Whitfield has been consecrated by the Bishop of Peterborough, amidst the rejoicings of the whole parish. On the 1st of February, 1869, during a very heavy gale of wind, the tower of the old parish church, supposed to have been built in the thirteenth century, was blown down, and Mr. Woodyer, architect, of Grafton, near Guildford, was consulted as to the state of the whole building. In consequence of his report a parish meeting was called, and the rector and the churchwardens were requested to take the necessary steps to have the old church pulled down and a new one erected. When the sum of 1,500l. had been collected instructions were given to Messrs. Mansfield & Booth, of Buckingham, who had sent in the lowest tender, immediately to commence the work according to designs furnished by Mr. Woodyer. The cost of the parish church, which was a high-pitched, open roof, before the day of consecration. The new church is constructed in the Early English style. It consists of a nave, north aisle, chancel, organ-chamber, and vestry, and has a low pinnacled tower. It is a larger church than the old one, and is capable of seating about eighty more persons. The roof is a high-pitched, open roof, of deal, stained and varnished. The old-fashioned high pews of the old church have been replaced by open seats, also of deal, stained and varnished; and the flooring is of boards. The aisle is paved with Staffordshire tiles, and the chancel with Westmorland tiles. There are two porches, a grand west porch under the tower, and a south porch. The pulpit is of stained deal like the pews, and the communion-table is of oak. A brass lectern has been presented by Mr. French, one of the churchwardens. It was manufactured by Messrs. Cox & Co., of London. A temporary organ has been placed in the chancel; but as soon as funds can be obtained a new one will be erected. The warming apparatus is by Mr. Remington, of Skipton, Yorkshire. The church has a peal of five musical bells, manufactured by Taylor & Sons, of Loughborough; they weigh about 27 cwt. The whole work has been carried out under the personal superintendence of Mr. Salmon, clerk of the works.

STAINED GLASS.

Ingestre Church, near Stafford.—A stained-glass window, by Messrs. Lavers, Barrack, & Westlake, for Lady Shrewsbury, has just been placed in this church. It represents the meeting between Our Lord and Nathaniel. The text is, "Behold an Israelite indeed, in whom there is no guile." The style is ornamentation and magnificence in Cinq-cento style. The window is erected to the memory of the late Earl, and is placed on the south side of the chancel. The cost was 75l. It is an adaptation of the style and tone of colour used in the early part of the sixteenth century. The novelty of the design is the introduction of swags and borders of pansies in lieu of those used commonly in Cinq-cento work. This was at the suggestion and desire of the present countess, as was, in fact, the general composition. Pansies were used because the youthful Lord Ingestre placed one on the coffin of his grandfather. The swags are over leaves. The window is a remarkable for the effective use of white glass: this gives to the rubies, olives, &c., the richness and power of early Cinq-cento work. The window possesses points of very great merit.

Annual Church, Perthshire.—Messrs. Lavers & Barrack have recently placed a large window in this church, which they have worked out in conjunction with Mr. J. E. Millais, R.A. The subjects are a series of fourteen of the Parables, which he illustrated some time since. The window is presented by Mr. Gray, of Perth (Mr. Millais's father). It is successful, and very much above the usual track. The window is a large Gothic one, at the west end of the church. It is 21 ft. in height and 11 ft. in breadth, and is divided into five lights. The lower portion is divided into ten compartments: over these the millions branch off, and the upper tracery includes four other compartments, which are filled in with medallions of the same design as those below. The fourteen pictures are representations of Scripture parables. There is no over-crowding of the figures or the scenes. The scenes in the largest or centre lights in the window have,

in the open squares of glass above and below, an ornamental cluster of flowers, consisting of Scriptural emblems; and the surroundings in the other compartments are also filled in with appropriate ornamental shields. The local superintendence of the work was entrusted to Mr. Smart, architect. The cost of the window will, we understand, amount to about 500l.

Pershore Abbey Church.—A stained-glass window, in memory of the late Captain Davies, has been inserted in the City of London, in consequence of the north aisle of the Abbey Church, by Messrs. Lavers, Barrack, & Westlake, of London. The centre of the window is occupied by a small medallion portrait of St. Luke the Physician, above and beneath which are larger effective groups, the upper one "Healing the Sick," and the lower one "Giving of Alms."

Books Received.

The Dictionary of Chronology; or, Historical and Statistical Register, alphabetically arranged, and brought down to 1869. By W. H. Orrell, F.R.S. London: W. T. Jones, 1870. **NOTION** founded on "Tegg's Chronology" this must be regarded as an entirely new work, and much care seems to have been bestowed to make it a reliable authority for the data of all historical occurrences. It will be found specially full in statistics of the City of London, in consequence of Mr. Orrell's connexion with the City as librarian to the Corporation. It is a very useful volume for the writing-table.

VARIORUM.

THE REVUE DÉCORATIVE (Asher & Co.), with 72 plates per annum, edited by Edouard Lièvre, author of "La Collection Sauvageot," is intended to contain varied examples from ancient and modern master-works, thus enabling subscribers to draw useful comparisons and opening new views and ideas to them. These examples and models will be taken chiefly from architecture, decoration, furniture, ceramic art, tapestry, and so on. The autographic process has been adopted, rare in the works of the old masters, which will be given by belyography, to secure faithful reproduction of the original, and carry out before creditably carry out the intention.—"The novel, 'Man and Wife,' by Mr. Wilkie Collins, in *Cassell's Magazine*, goes on awfully. The thunder-cloud has broken, and the terrible difficulty up to which the principal characters have been working, long obvious to the reader, is now seen by themselves. One main purpose the author has in view is to show the evil of immature devotion to merely physical development.—The current number of *London Society* has a quaint chapter by the well-known New Zealand, showing how, in the year 1871, all England emigrated to Australia, taking with them their best buildings. The idea is amusing, and deserved a fuller development.—The first volume of *Cassell's Household Guide* and the fifth volume of *Cassell's Educator*, now completed, are full of useful things. The *Educator* is especially valuable.—The quarterly part of the *English Friend* (Partridge & Co.), at 4d., is a marvel of cheapness, full of interesting cuts and writing.

Miscellaneous.

Harrogate Improvements.—At an adjourned monthly meeting of the local Improvement Commissioners, respecting the plans sent in for the improvement and development of the Victoria Baths estate, the Board decided that the three best plans should be selected and their authors requested to furnish fresh ones, or more definite instructions to be issued by the Board, such new designs to be the basis of awarding the premiums. The plans rejected were those by "Dedicatio" (Mr. Ridley, Starbeck), and "Vincero Cito" (Mr. Hirst, Bristol); and the three to be awarded premiums were those of "Alpha" (Mr. Bown, Harrogate); and Messrs. Nelson, Leeds), "Square within a Circle" (Messrs. Dyren, Leeds and Harrogate), and "5,500" Mr. Hiscor, Harrogate).

New Street, Whitechapel.—With reference to our notice of the opening of the new street Whitechapel, we are able to state that Mr. J. B. Marshall, of Stratford, and Mr. William Maxwell, Plaistow, were the contractors.

Air, Water, and Health.—Dr. Playfair, in the course of his address at St. Mary's Hospital, Paddington, when distributing the prizes, said the causes of disease had lately undergone a searching examination, and the close connexion had been established between disease and putrescent matter. No epidemic could resist cleanliness and ventilation. Dr. Christian gave as a formula, "Cleanliness and ventilation will extinguish any epidemic." In the very simplicity of the formula lay its danger: it was too like "wash and be clean" of the prophet. In 1847, from 30 to 40 deaths annually in the 1,000 of a civic population was held not extravagant. Now the average had been reduced to 25 in the 1,000, and hygienists believed in a reduction to 12 in the 1,000. If they could make the dwellings of working men as healthy as the felon's cell, they would add from eight to ten years to the life of the former. It was a terrible relation that 17,000 school-children died annually from foul air and filth. In what field was it necessary to labour to remedy these evils? Hippocrates spoke of air, water, and soil, and these were what they had in their day to work upon. They must prevent people from cherishing their filth in cesspools, or allowing it to run into rivers, to poison the dwellers on the banks. In concluding his address, Dr. Playfair said it was a great mission prescribed to sanitary reformers to stand between the living and the dead, and bid the pestilence to cease.

Conqueston Public Park.—The joint committee of the town council and the inhabitants, for the establishment of a public park and playground, have made an appeal for subscriptions in aid of the object. Mr. Kemp, the manager of the Birkenhead Park, proposes to lay out the town wood in walks, and to form the whole of the land between it and the river Dese into recreation and ornamental ground. The chief part of the land is already the property of the borough and Sir Charles Wankin Shakerley, Bart., has kindly offered to place at the disposal of the town council his property, at the disposal of the town council for the purpose of the park, on very favourable terms, on condition that the whole cost of the scheme be defrayed by voluntary subscriptions. To place upwards of 20 acres of land, commanding fine views of the surrounding scenery, at the service of the inhabitants of the borough for the purposes of health, recreation, and improvement, will require the outlay of 3,000*l*. Subscriptions have already been promised, including 100*l*. from Mr. E. Wilbraham, the high steward; and 50*l*. each from Messrs. B. Beales (mayor), J. Statham, J. Dakin, F. W. Warrington, M.D., D. Bradwell, and J. Wilson.

The Fatal Well Accident at Barking.—At the inquiry as to the deaths in this accident, and after the evidence had been led, the coroner stated that he had seen Mr. Rans, a competent engineer, on the subject, and he was satisfied that where there was no previous intimation of foul air being in the well, it was quite impossible to guard against such an occurrence as had taken place. There being so further evidence to offer, the jury returned a verdict that the deceased men were accidentally suffocated by carbonic acid gas while descending a well-hole at the Cherted Gas Company's Works at Becton. One would think Mr. Rans might at least have added that the insensibility of one of the men might have rendered it quite possible to guard against the occurrence of any more deaths, even although it were to admit, which we do not do, that the simplest test of a lighted candle was not to be expected to be noticed in such a case before the descent of the first man. No such "previous intimation of foul air being in the well" was sought for: how, then, was it likely to be found or guarded against? It can only be found by precautionary search for it.

A Library for Swansea or Caernarvon.—The late Rev. Rowland Williams, D.D., according to the *Cambrian*, has bequeathed his library, under certain conditions, to the first Welsh town which shall provide a suitable repository for it; giving Swansea the first offer, and Caernarvon the next. He has also bequeathed the residue of his personal estate in the same way as a library fund. The rev. gentleman was Vice-President and Professor of Hebrew in St. David's College, Lampeter. The library, says our authority, is to be open to all creeds, colours, and nationalities. The Swansea Town Council has accepted the bequest, and will, of course, provide a suitable building.

Preservation of Blackheath.—A public meeting has been held at Lewisham for the consideration of the draft scheme of the Metropolitan Board of Works for the preservation of Blackheath as an open space for health and recreation. After a discussion of two hours, the meeting expressed its disapproval of the health being planted or enclosed, considering that the great charm of the health was that the people could scamper over it, and do as they liked, without the restraints attached to ornamental grounds. A committee was appointed to attend the meetings of the Board of Works for the preservation of Blackheath. At an open-air meeting held on Blackheath, convened by the Advanced Liberal Association of Greenwich, to protest against the proposed scheme now before the Inclosure Commissioners, for placing Blackheath under the jurisdiction of the Metropolitan Board of Works (2,000 persons being present), a letter of apology for non-attendance on the part of Mr. Gladstone was read, in which it is said:

"I have to assure you that Mr. Gladstone cordially subscribes to the necessity of preserving open spaces for the exercise and recreation of the inhabitants, and I am directed to call your attention to the Bill which has been introduced by the House of Commons by the Secretary of State for the Home Department, with the sanction of the Government, relative to the preservation of common and waste lands. Mr. Gladstone is confident that any application to Mr. Knatchbull-Hugess respecting the particular case of Blackheath will require immediate attention, with a view to inquiry as to how far the provisions of the above-mentioned Bill might be made applicable to that locality."

Mausoleum at Headfort Demesne, Kells, Ireland.—The *Belfast Newsletter* states that the consecration of this structure, erected by the Marquis of Headfort, has taken place. The architect was Mr. J. F. Fowler. The Mausoleum was erected by Mr. H. Sharpe, of Kells. The building is in the Gothic style of the early part of the fourteenth century. The plan is octagonal; the centre portion, which is supported by eight arches, on moulded columns, rises to a height of about 100 ft., terminating with a cross. The total width at the base is about 42 ft. The gable over the entrance doorway is filled with Gothic tracery, containing in its centre compartment the arms of the marquis, surmounted by the coronet and crest. The entrance archway is moulded, and the jambs have double marble columns. The floor is laid with encaustic tiles, and the tower is ornamented with bands of red and black stone.

Coloured Decorations, Gloucester Cathedral.—Last autumn some of the leading firms of decorators were asked to submit designs for the adornment of the choir vaulting, and the Chapter, a few weeks ago, accepted the design of Messrs. Clayton & Bell. Already the decoration of about one-third of the choir from the east window has been effected, and the remainder will probably have been completed in about two months. The bosses are gilded, the painted figures are partly gilded, and colour has been applied to the tracery; the pannels are left uncoloured. Messrs. Grylls & Burillon are painting the vaulting of the chapel east of that of St. Andrew, a chapel which is to be restored in memory of the late Sir C. W. Codrington.

The Detroit River Tunnel.—A tunnel is about to be cut beneath the Detroit river, for railway conveyance between the Michigan Central Railway and the Great Western of Canada, to do away with ferry-boats. The tunnel company has been organised among the proprietors of these railways, and the Canada Parliament has passed an Act for the purpose. Mr. C. Chesbrough, city engineer of Chicago, has prepared the plans and estimates. The substratum is stiff blue clay. The length of the two parallel tunnels to be made from the Detroit to the Canada portal will be each 8,568 ft. They will be cylindrical, and 50 ft. apart; interior diameter of each, 18 ft. 6 in. The shell will be of brick masonry, 2 ft. thick. The grade on each side of the river will be 1 in 50, with 1,000 ft. of tunnel below the river. The estimates for the entire cost of tunnels and approaches, with steel rails, &c., amount to 2,650,000 dollars.

A New Rock Driller.—The Barleigh Rock Drilling Machine, used at the Hoosier tunnel and elsewhere, in America, has been shown at work, in Deptford. A certificate, signed, F. S. S. Darby, and W. Conisbee, engineer, Atlas Works, S.E., states that it drills a hole 3 ft. deep by 2½ in. in diameter, in a block of the hardest Cornish granite, in four minutes. It is worked either by steam or by compressed air, in which latter case it needs ventilation in boring tunnels.

Monumental.—A meeting of the Senate of Cambridge University has discussed the question of a site for the statue of the late Prince Consort, who for some time filled the office of Chancellor of the University. They recommend that either the Senate-house or the Fitzwilliam Museum should be adopted as the site. After paying for the statue, there will remain a surplus of 1,000*l*., which it was suggested should form the nucleus of a subscription for a corresponding statue of her Majesty the Queen, to be placed in the central hall of the Fitzwilliam Museum. The Vice-Chancellor reports the desire of the Senate to erect a statue of Sir Thomas Salt, the proprietor of Salthouse, who is not only a successful "merchant prince," but an excellent friend to his workpeople and their children. No contribution is to exceed 5*l*.

Australian Timber.—The Jarrah timber of Western Australia, also called Mahogany, is about to be cut on a large scale, by a new company, to be called the Western Australian Timber Company, who have obtained, from the Colonial Government, exclusive rights in timber on 520 square miles of the Western district for it, on condition that they construct works of a certain character, in a secure bay, called Geographe Bay, favourable to shipping, with saw-mills, railways, jetties, &c. The Jarrah timber has been often spoken of, we recollect, as a very valuable sort for sleepers, posts, piles, ship-building, dock gates, and other purposes. Another kind, called "corral" wood, is also valuable. Messrs. Dickburn & Co. of Ballarat, inform us that the works will be ready within eight months from March last.

The Proposed Greek Church in Wolverhampton.—The conversion of the late little Primitive Methodist chapel in the Waterloo-road, for the purposes of a Russo-Greek church, proceeds very slowly. Three crosses on the gables of the building, and the closing of old doors and the opening of a new one, are the external signs of progress; while inside, the raising and raising off a portion of the floor by the east of the four walls are the internal signs. It is the number of those in Wolverhampton who are likely to worship within the building in the Russo-Greek style is extremely limited, the projector, Mr. Hatherby, is dependent upon foreign aid for assistance, at the hands of two or three Russian travellers who have looked in upon him.

Road Steamer and Patent Omnibus.—The Lord Provost of Edinburgh and a party have been trying the working capabilities of Thomson's road steamer, with a new omnibus attached for the conveyance of 65 passengers—44 outside and 21 inside—rather than the usual seven, even for a London street omnibus, to be economical. This road steamer, it may be remembered, has wheels covered with india-rubber tiring. It is now in use (apart from the omnibus) in various parts of this and other countries. A Versailles omnibus, too, for 50 passengers, is drawn by one of Thomson's road steamers. The rate of speed in Leith Walk was about six miles an hour, and the conveyance exceedingly manageable, as in turning corners, stopping on steep incline, &c. The street horses generally paid little attention to it.

Improvements in Roadmaking.—Experiments are to be tried in one of the suburban parishes of London with a steam road-rammer, which, if the promises held out by the patentees, Messrs. Gore & Green, be fulfilled, is calculated to effect a revolution in roadmaking, and entirely supersede the steam roller as yet but slightly in use. The advantages claimed for the invention are, that it combines a traction-engine and rammer; hence it can be readily and easily moved from place to place. The machine is said to be equally applicable to roads paved with granite cubes and macadam. The blow from the hammer can be regulated. The machine is said to be so simple that any one of ordinary intelligence can work it.

Hancock's Door and Picture-frame Protector.—This is a simple little sixpenny affair, but well deserves to be known. The object is to protect picture-frames, skirtings, and so on, from the effect of a door opening against them. A little half-sphere of wood, with convenience for screwing it on where needed, receives in a hole over the screw-head a little buffer of india-rubber. There are many situations in which this will be found very useful.

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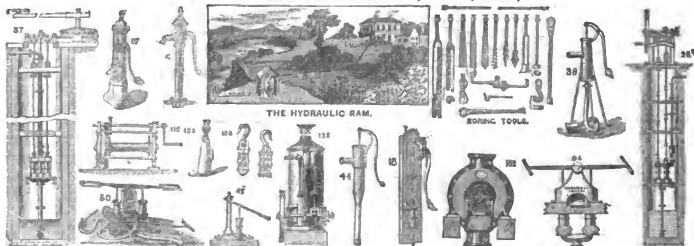
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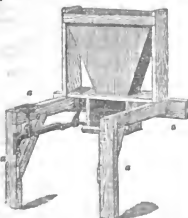
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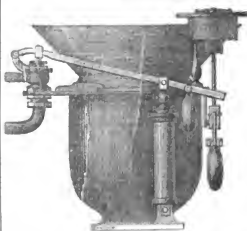
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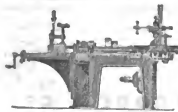
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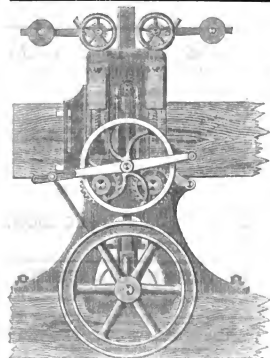
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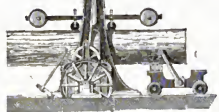
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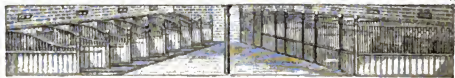
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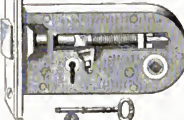
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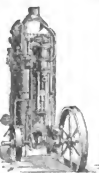
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VOL. XXVIII.—No. 1427.

Salisbury, Sarum, and Surroundings.

BEFORE exploring Old Sarum, which is close to the thirteenth-century city of Salisbury, and where, as we have said, the early history of the latter can be best grasped,* those who are visiting the neighbourhood for the first time should go on to that stone puzzle, Stonehenge, and try to satisfy themselves, if they have looked into the arguments on both sides, or rather on all sides, whether it be pre-Roman or post-Roman,—pre-historic or merely non-historic,—whether reared by the mystic Druid when

wild in woods the British savage ran before Cæsar had heard of him, or in that strangely obscure period, the Arthurian Round-Table time, in between the going of the Roman and the coming of the Saxon,—who it is known called the place *Stanhengit*, or the hanging stones. It was evidently an antiquity of unknown origin in the eighth century, and we see stronger reasons for believing that it was set up before the Roman domination than that its erection followed their departure. This marvellous memorial, looking like "the bowels of a mountain turned inside out," as Stukeley graphically describes its present aspect, should be religiously preserved. The plough and rights of property are gradually breaking down the outlying barriers and ancient ways; the cultivator approaches it nearer and nearer; and the time is not far off when it will be incumbent on the country to secure its inviolability by purchase of the site. The fallen stones, too, where the original position is obvious, should be raised and replaced—a good work for a good body, the Wiltshire Archaeological Association, to undertake. Once seen, Stonehenge can scarcely be forgotten: the dignity of the great trilithons is something surprising.

Coming back to Old Sarum we find, with much for doubt, a great deal that is certain and unmistakable. If there be no positive evidence that this remarkable elevation, with its crater-shaped central mound, and early known as *Sorbidunum*, the dry down, was a British fortification, there seems great reason to believe that it was; and we do know by testimony undeniable that it was occupied by the Romans, who left scattered over the soil in every direction dated metal memorials of their occupation, in the shape of coins from Hadrian upwards. That it was an important Saxon site the evidence is conclusive: we have documents dated about the year 720, conveying lands to the church of St. James, in "Sariſburig," and an order by the great Alfred, dated 872, translated thus:—"I, Alfred, king and monarch of the English, have commanded Earl Leofric, of Wiltshire, not only to preserve the castle of

Sarum, but to make another ditch to be defended by palisades." Afterwards comes here William the Conqueror, to impose military tenure. In his successor's reign, it is made the seat of the episcopal see in place of Sherborne; and then a cathedral is built, and part of the fortified area is held by the clergy and part by the castellan. This arrangement lasts a century, but with many squabbles, and at last the church throws off the military rule, and the new cathedral, such as we see it, is commenced in the plain below.

The Pope's Bull, A.D. 1218, for the removal of the cathedral, says,—"that forasmuch as your church is built within the compass of the fortifications of Sarum, it is subject to so many inconveniences and oppressions that you cannot reside in the same without great corporeal peril; for being situated on a lofty place, it is, as it were, continually shaken by the collision of the winds; so that while you are celebrating the divine offices, you cannot hear one another, the place itself is so noisy; and besides, the persons resident there suffer perpetual oppressions, that they are hardly able to keep in repair the roof of the church, which is constantly torn by tempestuous winds: they are also forced to hny water at as great a price as would be sufficient to purchase the common drink of the country: nor is there any access open to the same without the license of the castellan. So that the people were sometimes denied entrance."

It was a "dry down" in more senses than one. The church being gone, Old Sarum dwelled on until Edward III. gave a formal order for its destruction, granting to the dean and chapter all the stone walls of the former church for the improvement of the new cathedral and close.

A walk around the place is full of interest. It is not one of those earthworks that call for faith and imagination: the whole plan is clear. The area within the entrenchments is called about 23 acres; the outer fosse is from 80 ft. to 100 ft. deep; the west and east entrances are strikingly obvious, and near the latter are seen some large masses of concrete, part, probably, of the gateway in the Medieval outer wall. Close by, in the plain, lies the New Sarum, with the cathedral springing in its midst. Were we not right in saying that its early history could be best grasped amidst the neighbouring earthworks?

Of the more ancient church there is still a memorial. In uncovering the foundations of the cathedral in Old Sarum, a large key, doubtless that of the building, was found near the site of the west door, and, with a smaller key, discovered near the site of the high altar, is now to be seen in the Salisbury Museum, and serves to lock together with tangible bonds the old and the new.

This museum contains many things of interest, and has been well looked after by Mr. Nightingale, of Wilton, and Mr. E. T. Stevens. Salisbury has seldom been without a cultured man or two taking interest in its antiquities and history. The late Dr. Fowler, whose portrait hangs over the door in the Museum, and who would have been 100 years old if he had lived two years more (he was born in 1765, and died in 1863) was one of the most valuable of them. That he early took an interest in science is shown by the circumstance that when he died he was Father of the Royal Society.

The value of a local museum of this sort is immense: it serves, amongst other good offices, to prevent the dissipation of matters of interest. Thus a cross of Limoges Champlevé enamel turned up a fortnight ago, has already found its way there, and is safe.

The greater number of the Medieval objects were found during the excavations that were carried on in Salisbury a few years ago, for drainage purposes, when active friends carefully preserved all the relics that were brought to light.

As might be expected, few are earlier than the thirteenth century, at which time, as already said, the inhabitants of Old Sarum began the new city.

Attached to the county collection is a singularly valuable museum, founded by Dr. Blackmore, and which bears his name. At his cost a handsome open-roofed building, in the Medieval style, designed by Mr. Harding, and decorated by Messrs. Harland & Fisher, was erected at the back of the county museum, and with its contents, meticulously made over to the city for ever. The collection illustrates exclusively the pre-, or, at any rate, non-historic times, and is arranged under four heads,—Remains of Animals found associated with the Works of Man; Implements of Stone; Implements of Bronze; and Implements of modern Savages,—which serve to throw light on the use of similar objects belonging to pre-historic times. Recollecting that it was not older ago than 1840, when the late Mr. Boucher de Perthes first called attention to the human-worked flints found in the drift of the Somme valley, and that it was in 1857 when Mr. Prestwich and Mr. John Evans verified the discovery on the spot, the enormous collections of such implements made since in all parts of the world are little less than astounding. The various kinds of Celts that have been discovered,—not Kells by the way, the name has nothing to do with races, but comes from *celtis*, a chisel,—may be well studied in the Blackmore Museum, as may be the ancient lake dwellings of Ireland, Switzerland, and America. The modern discoveries on which the fact was established that early inhabitants of Switzerland lived in huts supported on piles above the surface of water must not be dated farther back than 1853. Herodotus describes a Thracian tribe as living in such dwellings in Lake Prasias, now in modern Roumelia; and we have accounts of African and other tribes doing the same thing still. The illustrations of tumuli and mound cities are valuable, and there is a very interesting model of ancient pit dwellings explored at Highfield, near Salisbury, in 1866. These pits are chiefly in groups communicating with each other. They are of bovine form, ranging in diameter at the bottom from 5 ft. 6 in. to 7 ft., though in some few cases they measure 14 ft. They are carried down to a depth of from 7 ft. to 10 ft. in the soil, and a shaft about 3 ft. in diameter seems to have afforded entrance to each group of pits. The men of Salisbury of that period did little more for their personal comfort than rabbits, and something less than boars. Implements of flint and of bone were found in these pit dwellings, including some horn combs, with the teeth broken off, that closely resemble some in recent use by the Esquimaux for scraping fat from the backs of skins, excepting that the latter were made of wood with the sharp claws of birds lashed to them.

It will afford a contrast if we go from the contemplation of these retreats of our early predecessors to one of the historic houses of the neighbourhood, say Wilton House, "Pembroke's princely dome," filled with works of art and ingenuities—results of the highest intelligence—enjoyments and elevators for all time.

This house is about three miles from Salisbury, and is most liberally opened to the public. Holbein and then Inigo Jones were concerned in its first erection. It is best known by the collection of antique sculpture it contains, commenced in 1678, when the then Earl of Pembroke bought part of the Arundel marbles. It is curious to note how much less pleasure the majority of visitors find in the examination of such works than in viewing a collection of pictures. Many, indeed, who would contemplate with interest the sculpture round the doorway of a Medieval cathedral, often distorted and ill-drawn, even if vigorous and expressive, look coldly and carelessly on the more perfect pro-

* See p. 437, ante.

decisions of classic art, scarcely recollecting, even, the astounding fact that these in many cases unapproachable works were executed two thousand and more years ago. The reason is not difficult to find, but we will not stop just now to look for it. The marbles at Wilton greatly differ in value and interest. The same may be said of the pictures, though the collection as a whole justifies its reputation. The large Vandeyck, representing Philip Earl of Pembroke and his family, although greatly injured by time and restorers, is a noble picture worth a journey; it says nothing of the painter's name. Charles I., Holbein's portrait of Sir Thomas More, and the remarkable little diptych of King Richard II., the second leaf having on it a presentation of the Virgin and Child. Having been painted early in Richard's reign, it has been mentioned as evidence that oil-painting had been practised previously to its supposed discovery by Van Eyck about 1414, but Waagen points out what appears to us incorrect, that it is in tempera. The execution is singularly delicate. In the grounds, a bridge by Holbein, a view of Salisbury Cathedral, seen between two masses of trees, and recollections of the painter Sidney and his "Arcadia," occupy the thoughts.

Every one knows of the church at Wilton, built at the cost of the late Lord Herbert of Lea, then Mr. Sidney Herbert, and fully described in earlier volumes of this journal.* The design is founded on the churches of Santa Maria and San Pietro, at Toscaneta, and interior glow with marble, mosaic work, colour, gilding, and stained glass.

There is nothing better, however, in the building let us say, than the two monuments in memory of Lord Herbert and his mother, the Countess of Pembroke, executed by Mr. Esmie Philip, and illustrated in the Builder.†

How far the erection of this costly church helped to lead the widow of its illustrious founder to the Church of Rome has yet to be traced.

Going out another three miles on the other side of Salisbury, to Longford Castle, much less known than Wilton House, is met with— a quaint casket with rare contents. The collection of pictures is surprisingly interesting. Waagen, in his book, grumbles greatly about the way in which, having obtained admission with great difficulty, he was hastily driven through the rooms. A different system prevails now for, though our visit fell on a day when the rooms are not supposed to be open, we were received with the greatest politeness, and allowed to loiter as we would. And a rare treat it is. So far as regards Holbein, it is not too much to say that, to appreciate fully the merits of that great master, Longford Castle must be visited. Here is found the life-like portrait of Erasmus that he brought to England, with a letter from the original, to introduce him to Sir Thomas More. On the frame is this quotation,—"E tenebris clarum doctrinæ solenne lumen, qui fidei positivæ primus Erasmus erat." Holbein's portrait of Eragidius, the traveller, to whom also Erasmus had introduced him, is another fine work; but the grandest of his pictures is a large canvas, showing two male figures, the size of life, richly dressed, with a table, philosophical instruments, and music. The title given to it, the Two Ambassadors, is unsatisfactory. A little study would, probably, bring out something less so. The German words on the music are readable; the dagger of one of the figures and a book are both marked, "Sicut erat." With or without the desired knowledge, however, this is a wonderful work. Clendish's well-known "Morning and Evening;" Titian's portrait of a sculptor; the Recumbent, by Rubens; Carlo Dolce holding his own profile; Teniers, by himself; Guido's head of a Magdalen; a Queen Elizabeth, by Zuccheri; and a Spanish Admiral, by Velasquez, are other pictures to remember. Nor can we omit to mention, if not very attractive chapel, a triptych which, if not by Albert Dürer, as was long thought, is, nevertheless, a remarkable painting. On all sides are noticeable things; amongst them the marvellously worked steel chair, with its hundreds of small figures in the panels, which was presented to the Emperor Rudolph II. by the city of Augsburg, and excited astonishment at South Kensington while ago. Thomas Baker, who made it in 1577, has put his name to it. He was one of whom all the Smiths may be proud.

The castle, so called, is curious in form. Sir Thomas Gorges, married to a Marchioness of Northampton, employed the well-known John Thorpe as his architect, and built it about 1591, in the shape of a triangle with huge circular towers at the angles, and a most arched. The late Lord Radnor began to turn it into a hermitage, but left it unfinished. The towers give it a character of its own, but the details do not pay for close inspection. Gwilt says a diagram of the Trinity was drawn in the middle of the triangular court; we had no opportunity to see if this still remains. Gwilt says, however, we may look, that these are but a few of the surroundings of Salisbury and Old Sarum.

NEW PALACE AT WESTMINSTER.

PROPOSED ADDITIONS AND ALTERATIONS FOR NEW REFRESHMENT ROOMS.

EVER since the year 1853, the necessity of enlarging the dining-rooms of the House of Commons has been recognised, and the architect (Mr. E. M. Barry) has, as our readers are aware from notices in these columns, prepared plans for the purpose. For the purpose of the select committee on this subject, of which Mr. Ayrton was chairman, has just issued a report, recommending the adoption of a plan. This plan is somewhat oddly termed the First Commissioner's plan, but having examined it, we find it, in fact, a part of Mr. Barry's scheme of last year, having been copied from his plans, which have been approved by committees of Lords and Commons. It proposes, 1st, the conversion of the conference-room and adjoining tea-room into new dining-rooms; and, 2dly, the erection of a new peers' committee-room, in lieu of the conference-room. It appears that Mr. Barry suggested the first arrangement in 1857, when the kitchen committee thus reported on his plan:—"That Mr. Barry has now suggested a new plan for improving the accommodation, viz., by converting the present conference and adjoining committee-rooms into a large dining-room for both Houses of Parliament, in lieu of their present separate dining-rooms, which could be used for tea-rooms, or for other purposes; and they are of opinion that this plan is preferable to any yet produced before your committees, and from inquiries they have made, they have reason to believe that such an arrangement would give general satisfaction." The same committee reported last year, that "they saw with satisfaction that in the new plans lately laid before the House by Mr. Barry, it is proposed to adopt the original proposition of converting the present tea-room and the conference chamber into new dining-rooms."

In order to meet objections raised by the Lords' Committee, Mr. Barry suggested the second arrangement respecting the substitute for the conference-room in 1869, and the Lords' Committee thus reported upon it last session:—"The committee approve of the new conference or committee room proposed in the new plan submitted this day by Mr. Barry." They now further report (p. 8) that they "approved" Mr. Barry's plan of last year, and are willing to "accept" Mr. Ayrton's version of it, if he will alter the entrance in accordance with Mr. Barry's

We are credibly informed that Mr. Barry's design has not been paid for, as he only asked for a fee of fifty guineas for attendances on the committees and the preliminary negotiations, expecting, according to custom, his remuneration when the plans were carried out.

Various grave objections to the present plan will occur to our art-readers from an architectural point of view, and there are, in addition, some obvious practical inconveniences in the changes made in Mr. Barry's plan. Thus (1) the entrance to the new committee-rooms is so covered that the public must ascend five steps in order immediately to go down five more before entering the room. (2) The serving-room has no external light or ventilation, and will be very objectionable. (3) The kitchen is narrow, being 14 ft. 9 in. wide, and only 12 ft. 8 in. high, or a few inches higher than the present kitchen, the lower which is inconvenient. (4) The rooms on the ground-floor under the new committee-room will be much darkened. All these defects are interpolations.

It will be easily seen from the foregoing remarks that the work requires architectural

skill; it is no mere matter of routine which can safely be entrusted to a clerk of works, as is shown by the fact of Mr. Ayrton's estimate being no less than 6,000*l.* It embraces new building, as well as alterations, and will affect the architect and contractor both in the plan both externally and internally, and Mr. Gladstone and Mr. Lowe led the House of Commons and the public to believe that an architect would be employed for such works, and that Mr. Barry should be that architect. We have therefore a right to claim the redemption of this pledge.

As much is not said about the scheme, it is right to add that the present plan is a small portion only of Mr. Barry's general design of last year; for in that scheme was included, by order of the Government, a new library, dining-rooms, and committee-rooms for the Lords, and also extensive offices for the purpose of joint refreshment-rooms for both Houses of Parliament, in connexion with the plan for a new House, recommended by the Select Committee on House of Commons Arrangements. This part of the scheme is now abandoned. The proposed new peers' committee-room is, however, Mr. Barry's suggestion, and the plan has been copied by this part of the estimate of the latter admits of comparison with Mr. Barry's estimate of last year. Mr. Ayrton's estimate, including the entrance, is 2,450*l.*; Mr. Barry's was 3,135*l.*, but Mr. Barry's room was 3 ft. wider, and the floor was raised to get height for the new kitchen beneath, and to avoid steps down. Mr. Barry's entrances were also larger and more convenient. It is therefore clear, that for the same things Mr. Ayrton's estimate and Mr. Barry's would not greatly differ. Moreover, Mr. Barry stated to the committee, last year, that his was a "covering estimate," and he fully intended to be able to get the work done for less than was stated therein. On this subject we may quote, with approval, from the present Report, the following extract from the Report of the Lords' Committee (p. 5). Their lordships state, that "they are very sensible of the importance of observing reasonable economy in all public expenditure; but they feel that, in making permanent provision for the accommodation of the Houses of Parliament, it is desirable that all should be done in the best manner."

We say the same. It is not fair to the public to allow a public building of elaborate architecture to be erected, when, by their own confession, are ignorant of architecture and incompetent to deal with it. It is not fair to Mr. Barry to appropriate his ideas, which he has given to the public on the supposition that, if they were adopted, he would be engaged to realise them, and to allow others to carry them out in a mutilated and unsatisfactory manner.

OLD STAINED GLASS IN ENGLISH CHURCHES.

To possess an adequate acquaintance with the series of historic and artistic representations yet extant in the stained and painted windows of the cathedrals, chapels, churches, and ancient mansions of England, is a matter of no trifling importance to all professors, students, and lovers of architecture and of art in general.

We trust, therefore, that the following statement, drawn up, in the first instance, from the materials collected in the "Universal Art Inventory," referred to in a former number of our journal, will be found of use. As, however, the total number of buildings included in that catalogue far exceeds a hundred, there can be little doubt that the list, although we have ourselves doubted its length, is still susceptible of very considerable augmentation.

The first step to this desirable end we take to be that now accomplished. What has been collected by the care of Mr. Cole, is now presented in a clear and compact form, separated from the foreign examples, and augmented by collection of the best authorities, to our readers.

Every architect, every clergyman, every proprietor of a historic mansion, in England, may now see, by a glance at our pages, whether the existence of the stained glass in any particular windows under his care, are duly recorded or not. In the latter case, we trust that few of such guardians of these relics of an important art will hesitate to fill up the gap which exists, and which is now brought to their own personal knowledge, or to communicate, in the proper manner, the information at their command.

They should specify, 1st, the nature of the

* See also a paper "On Early Christian Buildings and their Decorations," illustrated by Wilton Church. By Geo. Gwynn. *Journal of the British Archaeological Association*, vol. xv, p. 131.

* George died in 1613, and has a monument in Salisbury Cathedral.

building; 2ndly, the locality; 3rdly, the form of window; 4thly, the subject and mode of treatment; and, 5thly, the date, and the reasons for its determination. If any existing description be accessible, it should also be indicated.

The stained glass known to be now existing in this country, of date earlier than the year 1800, A.D., may be divided into seven groups, each containing the production of a century.

Glass of the Twelfth Century.

Only five examples of twelfth-century glass are recorded in the inventory.

A window of the church at *Brabourne, Kent*, was at one time considered to be the only example of glass of the twelfth century in England. It contains geometrical patterns, slightly painted.

In the north aisle of the choir, and also in the Trinity Chapel, of *Canterbury Cathedral*, is stained glass of this period, representing the figure of *Thomas à Becket*, and medallions filled with minute figures.

In the vestibule of the Chapter House, *York*, are fragments of Norman glass.

In the Church of *St. Denis, York*, are the remains of a "Jesse window," attributed (doubtfully) to the year 1200.

The most important example of Early English stained glass in England is to be found in the great rose-window in the north transept of *Lincoln Cathedral*. It is dated "about 1300 A.D." In the central part is a representation of the blessed in Heaven, with Christ sitting in the midst. In the sixteen circles forming the outer part of the window are twelfth-century figures; and in each of the four trifoliate arches is an angel treading a thurible.

These two last examples, if the dates are correctly determined, mark the period of transition from the Norman to the Early English style of architecture. Glass fixed in the year 1200 A.D. must have been executed before the close of the twelfth century.

Glass of the Thirteenth Century.

Forty-one buildings adorned by English glass of the thirteenth century, are named in the "Universal Art Inventory."

In the aisles surrounding the Trinity Chapel, *Canterbury Cathedral*, are three painted windows, representing the miracles of *Becket*. In that on the north side, on a medallion, is a representation of *Becket's* shrine, with the prelate issuing from it in full orison, to say mass at the altar.

In the Church of *Little Casterton, Rutlandshire*, is a lancet window, with stained glass, consisting of lozenges described by margins of different colors, forming panels, with bosses in the centre differently constructed and richly coloured, the general ornament being foliage arranged over the whole surface. This is referred to the latter part of the thirteenth century.

The east window of *Chesham Church, Berkshire*, is of Early English glass, with pictures introduced into a white pattern. Date, 1265-1270.

The rose-window of the south transept of *Lincoln Cathedral* is filled with fragments of glass collected from different parts of the cathedral, and chiefly Early English. The coloring is very rich. The east window of the choir aisle contains medallions of Early English glass, thought to represent incidents in the life of *St. Hugh*.

The east window of *St. John the Baptist*, and a mutilated shield of late execution, bearing the arms of *Bishop Williams*, those of the See of *Lincoln*, and those of the Deanery of *Westminster*; all more or less patched. The date attributed is about 1272 A.D.

In *St. John's Chapel, Morten College, Oxford*, are painted side windows of white patterns with pictures inserted, of the latter part of *Edward I's* reign.

Salisbury Cathedral contains in the nave and aisles the remains of an Early English Jesse window, dating about 1240 A.D., and medallions, representing Biblical subjects, not earlier than 1270 A.D. In the side aisles are windows of ornamental patterns, varying in date from 1240 to 1270 A.D. In the south transept, and in the cloisters are remains of Early English glass.

There is a five-light east window, of a Deco-

rated white pattern with pictures inserted, of the latter part of the reign of *Edward I*. In the church of *Salting, Kent*.

In the Chapter-house of *Southwell Minster* are remnants of glass of the reign of *Edward I*. There is a small medallion in the second window from the east, on the south side of the nave representing a knight on horseback, tilting with a long spear under his arm, of the same period.

In *Trumpington Church, Cambridgeshire*, are windows attributed to the thirteenth and fourteenth centuries.

In the Church of *Westwell, Kent*, the east window contains what is called "the only known fragment of Early English mosaic painted glass existing;" two figures only, of the *Almighy* and the *Virgin*, remaining of the original four. In one of the side windows are "quarrels" of brown lines, enclosed in a richly foliated border. Date A.D. 1220.

In the north transept of *York Minster*, is the beautiful window of five lancets, known by the name of the *Five Sisters*, filled with glass, representing foliage and the principal geometrical forms, in coloured and ornamented glass bands and leads. Date latter half of thirteenth century.

The church and in the refectory, of the *Hospital of St. Cross, Winchester*, are fragments of Early English, mixed in with other glass.

The contents of two boxes filled with fragments of Early English glass, brought from *New College, Oxford*, are placed in the cloisters of the library at *Winchester*.

The windows of stained glass were added to the Norman Chapel of *St. John*, in the Tower of *London*, in the year 1340 (see the "Guide to the Tower of London"). They are not referred to in the inventory. It is also questionable whether the glass last mentioned as being placed in the Chapel of *Winchester*, is correctly attributed to the thirteenth century, as it is also stated to be "principally of Wykeham's time," which was the close of the fourteenth and commencement of the fifteenth century.

Glass of the Fourteenth Century.

Examples of glass of the fourteenth century are about as numerous as those of the thirteenth century. The Art Inventory cites thirty-one.

The east window of *Bristol Cathedral* is filled with painted glass of the date 1320 (restored in 1847), representing a tree of Jesse. The lower lights contain figures of the *Virgin* and infant *Jesus*, prophets, and kings; in the upper narrow light is a display of heraldry. Pair side windows in the chancel are filled with colored glass of the same date.

The east window of the choir of *Carlisle Cathedral* is filled with stained glass of the time of *Richard II*, representing the general Resurrection.

Painted glass of the close of the reign of *Edward III* exists in the chancel of the church of *Chartham, Kent*.

The east window of the church of *Cheekley, Staffordshire*, has a window, of five lights, decorated with pattern glass, with pictures inserted; the Crucifixion in the centre, knights and bishops and saints on each side. The date is 1330. There are two side windows, each with three lights, with one tier of medallions.

At *Cranley, Surrey*, the east window of the church is of painted glass; one of the spandrels contains a figure of the *Saviour* sitting in judgment, with the globe in his hand, upon which three great periods are emblematically indicated. The lower third is wavy, to denote the flood; the centre contains the tables of the law; and the upper part bears the cross.

The window of the choir of *Easter Cathedral* is filled with painted glass; that in the lowest and middle rows representing figures of saints under rich and varied canopies; in the uppermost row, figures of *Abraham*, *Moses*, and *Isaac*; at the bottom, shields of early bishops and benefactors.

The best of the east window of *Frogly Church, Hampshire*, is filled with glass representing biblical subjects, of the latter part of the reign of *Edward III*.

The great east window of the choir of *Gloucester Cathedral* is filled with the finest stained glass of this period in England. It represents a long series of figures, prophets, and Jewish kings, larger than life. Date, 1345. The side windows of the choir retain much of their original glass, of the same date with the east window.

In the Lady Chapel, *Hereford Cathedral*, is a window, from *St. Peter's Church* in the same

city, representing our Lord bearing the Cross and the Crucifixion, &c.

The east window of *Hitcham Church*, in *Buckinghamshire*, is painted in compartments, the upper ones containing figures of angels, each standing on a wheel, inscribed, in Lombardic capitals, with the mystic titles of the orders of the heavenly hierarchy,—"Virtutes, wisdoms," &c. The other windows of the chancel contain medallions, the remains of stained glass of the same date, the middle of the fourteenth century.

In the Church of *Kingsdown, Kent*, is a light containing a representation of the *Virgin* bearing the *Infant*, of the same date.

The west window of the nave of *Lincoln Cathedral* has the upper tracery filled with glass of the middle of the fourteenth century.

The same date is assigned to the east window of the Church of *St. Lawrence, Ludlow*, which represents the history of *St. Lawrence*, in twenty-seven compartments.

In the chapel on the south side of the choir of the *Friary Church, Great Malvern, Worcester-shire*, are three four-light windows, two of which are divided into compartments by labels, and represent Biblical scenes from the Creation to the Deluge. The third window contains full-length figures of *St. Peter* and *St. Andrew*, the heads of which are at the sides, are angels bearing the emblems of the Passion—the spear, the reed, the sponge, the scourge, the ladder, and the nails. Date, fourteenth century.

In the chancel of the Church of *Norbury, Derbyshire*, are windows of white patterns, with shields of arms inserted. There are stained windows in other parts of the same church, also of the fourteenth century.

Fragments of fourteenth-century glass are inserted in the west window of *Christchurch Cathedral, Oxford*. In the middle of the large five-light window of the north transept is represented the murder of *Thomas à Becket*, the archbishop kneeling before the altar of *St. Benedict*, his cross-bearer, the *Saxon* monk *Grim* standing at the side, the figures placed upon a diaper ground of red and blue. This is attributed in the inventory to the fourteenth century, but it should be noted that the portraits and the miracles of *Becket* in the Trinity Chapel, at *Canterbury*, are ascribed to the twelfth and thirteenth century. *Becket* was murdered in 1175 A.D. It is hardly likely that his miracles would have formed a theme for the glass-painters of the fourteenth century.

In the ante-chapel of *All Souls' College, Oxford*, is a painted window representing *John of Gaunt* wearing a royal crown, with the globe and cross in his right hand, and the sceptre in his left. He wears a blue mantle fastened under his chin with a gold brooch. Beneath is the inscription in Old characters, "John of Gaunt, 1391-1399, Dux Lancasterie." This window is thought to have been placed in *All Souls'* by this founder, Archbishop Chicheley.

In the ante-chapel and Chapel of *New College, Oxford*, are windows filled with figures under canopies, and with a series of angelic choirs, dated 1370-1395. In the Chapel of *Queen's College* is also some fourteenth-century glass.

In the east window of *Oxford Church, Surrey*, are four large quatrefoils, containing the mystic beasts, or symbols of the *Evangelists*—the angel, the lion, the ox, and the eagle, upon a diaper ground. The east window of the Church of *St. Rev, Cornwall*, consists of five lights filled with glass representing the *Stem of Jesse*, with branches containing figures of kings, prophets, saints, and the *Virgin* and *Child*. Date, fourteenth century.

There is some glass, apparently of the reign of *Edward III*, in the west window of the north aisle of the Church of *St. Thomas, at Salisbury*.

Large remains of the original painted glass, doubtfully attributed to the fourteenth century, are to be found in the windows of the Church of *Stanford, Leicestershire*.

In the choir of *Teakbury Abbey* are several figures and canopies of windows, containing full-length figures of kings, knights, and saints. Date, A.D. 1330-1337.

In the west window of *Wells Cathedral*, amid some French and German glass of the sixteenth century, are the figures of *King Ina*, earl of *Bishop Ralph*, and *Shrewsbury* dating about 1355. The eastern, and two adjoining windows of the choir represent a tree of Jesse, terminating with the *Crucifix*, *Abraham*, *David*, and the *Virgin* and *Child*, *Solomon*, *Daniel*, *Ozias*, and an undetermined figure, in the upper compartments, and the *Day of Judgment* in the tracery lights.

St. George, in armour of character appropriate to the date, is in the north-east window. In the Lady Chapel the windows are a confused mass of fragments, with the exception of the east window, which has been admirably restored by Wilmont. The colouring of the whole is superb. In the chapter-house are fragments containing the arms of Mortimer, and those of France and England quarterly.

In the Church of St. Nicholas, at *Wilton*, near Salisbury, is some French stained glass, in the Early English style; one panel representing the Marriage at Cana in Galilee. The date is about A.D. 1460.

The stained-glass border of the east window of the church of St. Peter's Church, Chesham, Winchester, is attributed to the fourteenth century.

The west window of Winchester Cathedral is filled with the remains of painted glass, selected from different parts of the church after the destruction of the rest by the troops of Cromwell. The top central light of the east window of the choir is filled with some glass of Wykeham's time. (This is stated on p. 148 to be the fifteenth century, and on p. 149 to be the latter half of the thirteenth century. William of Wykeham died in 1404 A.D.)

The heads of two canopies in the east window of the church of St. Andrew's Church, Winchester, are also attributed to the fourteenth century.

In the clerestory and aisles of York Minster are windows of stained glass, all of the time of Edward III.

There is glass of the fourteenth century in the western window of the north aisle of the Church of St. Martin-in-the-Fields, York.

Portions of glass remaining in the windows of the College Hall, Westminster, bear the initials N. L., being those of about Edmond Liddell, A.D. 1376-1386. The wreck of the splendid windows of Westminster Abbey has been entire. When we find that even the substantial, solid, bronze salutes that adorned the pile surrounding the monument of King Henry VII. have for the most part been mutilated or stolen, we can but wonder that so little glass should have escaped the ravages of fanaticism, or of mere mischief. St. James, St. Bartholomew, St. Michael the Archangel, and St. Edward, King and Confessor, and founder of the abbey, seem alone to have been respected by the Londoners. The weight of each of these spirited statues is such as to make it no easy matter to tamper with its integrity. The abbey is now being gradually filled with stained glass, twenty-two windows having been thus ornamented within the last five years.*

ARCHITECTURAL STUDIES.

ONE letter out of a dozen, to the same effect:-

"Dear Sir,-If you or any of your readers will tell me the usual course of studies or duties that a pupil has to go through to become a thorough architect, you or they will infinitely oblige.-An Inquirer."

We wonder how many envious architectural pupils, or would-be pupils, *Aspirants*, &c., are puzzling themselves for a satisfactory answer to the question which reached us in the above form a few days since. The very wording of the request is an indication of the uncertainty with which the subject is viewed. "Studies or duties," there is the rub. What is to be a study? Is it in our term of pupillage to be spent mainly in studying systematically under the direction of an experienced teacher, or does the existence of "articles" merely bind us to the performance of whatever commands our principal may lay upon us, with the chance of picking up in time what we can from the details of his practice? That is the question, or one of the questions, which has to be answered, and which the less careless and more industriously-inclined of our embryo architects are beginning to ask rather pertinaciously, in various forms and through various channels. What is the usual course of duties that an actual pupil is expected to perform, in a great number of cases, is an inquiry not difficult to answer. He will copy the letters and specifications, and will perhaps take the further to the post-office. He will be initiated into the delicate art (requiring some degree of manipulation) of laying drawing-boards and mounting tracings on paper or calico. If in a metropolitan office, he will answer the "office bell;" if in a provincial one, he will do battle with intruding "travellers"

at the counter. If he acquit himself honourably in these duties, and acquire a habit of using his instruments with neatness, finish, and despatch, utter want of system will be manifest in the drawings for the contractors' use, and may, in time, acquire sufficient insight into the mysteries to enable him to assist in drawing out plans and sections from the rougher sketches of his employer, with the aid of figured dimensions or verbal directions. And here, if he possesses no more than ordinary sense and application, he will probably remain, and at the close of his articles, will find himself in possession of such a degree of knowledge of technical terms, of the general language and provisions of specifications, of the usual mechanical process of getting up drawings, as will enable him to make a respectable appearance in the eyes of his friends and relatives, if called upon by their kind partiality to furnish drawings for a house or a shop-front. If, on the contrary, he be a clever young man, with a natural ability for drawing and designing, he will be able to do good service, with the knowledge of his master's style of designing to render material assistance in turning out ornamental detail, and even to improve upon the established design of his office, and may have the satisfaction, before his articles have expired, of contributing largely to the success of his employer for which goes, of course, to the principal in whose name they have been erected. This, on the whole, we believe, a pretty fair résumé of "duties" of architectural pupils in offices which represent the average of the profession; and, on the whole, it may be said that the master, if he receives a good premium with his pupil, has the best of the bargain; since the pupil, even if thoroughly stupid, is, at all events, merely a slight hindrance in the progress of the work; and, if clever, or even fairly sensible and industrious, he is pretty sure to be positively useful, without necessarily mutilating any trouble on his principal, who is (practically, at all events) supposed to do his full duty to the pupil in letting him have the run of the office, and the facility for picking up familiarity with whatever constructive or ornamental work is going on. How far this can be called "education" towards the desired end of becoming a "thorough architect," we endeavoured to point out some time since in a paper,† to which we may refer those of our readers who are specially interested in the subject. In the "usual course" of things, we are not aware that any particular line of studies is recommended, or exacted from, the architectural pupil, so that the most comprehensive answer as to what is required of him at present, would be "Duties" - disagreeable to students - none.

We do not mean to imply a sweeping condemnation of all members of the profession who take such duties as above, although we fear that with regard to the course pursued in a good many offices no condemnation could be too strong. In other cases it may be said that the system is more to blame than the individuals who, partly from mere habit, fell into the usual way of working. An architect in busy practice has really little time to bestow on training pupils; and is, nevertheless, if he be a man of any note in the profession, probably often solicited to take them rather against his will. Nor, on the other hand, would we say that the system of office apprenticeship is without its advantages which are wanting in the more systematic academic system of training. Living amidst the routine of work, and in the way of seeing the actual carrying out of the buildings for which drawings have been made, must, if properly made use of, confer on the pupil a better and readier knowledge of the practical working of his profession than can be attained by only producing ideal designs in an atelier; though we fear even this advantage is often practically denied, for we have heard complaints from many architectural pupils that they were never commissioned to visit buildings in progress, and were sitting of the work beyond the stage of the drawing-board and model. Taking the apprentice system at its best, however, it has the practical advantage referred to; and we would rather desiderate a union of this with the academical system, than an entire relegation of architectural education to the latter. It is not our object, however, just now, to indicate the bearings of a thorough architectural education, which must be a work of

time, but to give some hints which may be useful to students for the present. The serious defect in our present educational system is, in fact, utter want of system; and the most knowledge of the history and principles of his intended profession must be acquired by the student's own private studies out of office hours; and though we do hold, most positively, that every architect who accepts a pupil is bound to give him the best advice and suggestion in his power on these matters, we are willing, on behalf of the students, to give such hints as may tend to supply the direction which each ought by rights to obtain from his own professed (and generally) paid teacher.

In the first place, then, we would say to the young articulated pupil, make yourself acquainted with the general history and (as far as you can) the general principles of architectural design. This is commonly the very last thing that is done or recommended; and the consequence is, as we have before pointed out, that a student merely learns, not the art of architectural design, but the peculiar manner of his own master, which may be bad or good, artistic or laudatory. Many men thus fall into a facility for rapidly producing drawings in an acquired manner, and achieve a pecuniary success in their profession thereby, without leaving behind them one building worth the name of artistic thought and style, or anything better than mere mannerism. The only way to steer clear of this is to take a wide view of the subject at first, to acquire a knowledge equally of all the leading styles of architecture, and especially of the two purest and most typical styles, the Greek and the thirteenth-century Gothic, together with some idea of the conditions both of society and climate under which they arose, and of the antecedent imperfect styles out of which they were developed. Such a study, if carried on in an intelligent spirit, even without going minutely into historical details, is the result of artistic thought and style, and cannot fail to aid the student in attaining a clear conception of the real nature and importance of the art which he is endeavouring to learn; and to the same end we would recommend him to endeavor to form and retain something like a definite conception of the general principles which should govern architectural design as distinguished from other arts. We say this not with a view to encourage idle and utopian theorising, for which there was never less time than at present, but to urge the architectural student to consider what it is which he is undertaking to do in becoming an architect, and not to be a mere blind follower in the grooves in which he happens to find himself. We will not just now recommend a regular list of works for personal; but we may mention, as books which will assist a beginner towards a comprehensive view of the history of his subject, the "Course and Current of Architectural Design," by Mr. H. H. Thompson, accompanied by a chart representing at a glance, by a simple method, the chronological and topographical relation of the various past styles. Among works dealing with principles of design, too, we may recommend attention to Mr. Garbett's little work on that subject (published in "Webb's Series"), and to Mr. Ferguson's "True Principles of Beauty in Art," not as endorsing all opinions to be found therein (for, in the latter especially, there is much from which we should dissent), but as works thoughtful in themselves, and suggestive of thought to other readers. The "History of Architecture," may be read, with advantage, as also various papers, both in recent and in earlier numbers of the *Builder*; and the student having, through these or such works, acquired a general idea of the history and scope of his profession, will be in a position to take up a more detailed study of the subject. Mr. J. M. Ferguson's well-known "Handbook" will, perhaps, furnish the readiest means in the first instance of study and comparison of leading characteristics of style, while there are numerous works, many of which we hope are to be found in good libraries, giving more detailed information and illustration of the most important varieties of architectural style. What we specially recommend in reading, as will be perceived, is a regular progress from general history to detail; by this course the student will obtain a much clearer and more intelligible notion of his subject, and will be able to turn to, with regard to modern architectural works, than by merely reading promiscuously and at random, however diligently. We must know something of the whole before attempting to judge of parts and those who have formed a pretty comprehen-

* Remainder in our next.

† See "Generalisation in Architectural Education," in the *Builder* for September, 1869.

ive idea of the whole history of architectural style will be the less likely to be led away by the false and often almost barbarous taste of the present day, and the *ignes fatui* of some modern writers on art.

So much for literary study of architecture. While pursuing this course of reading hinted at, the student will have been gradually acquiring, we shall suppose, in his office, familiarity with the use of his pen and pencil, and with the general style and meaning of architectural drawings, plans, sections, &c. We shall combine his theoretical and his practical knowledge for the production of designs of his own (which he ought to be allowed and encouraged to do in the office on occasion, instead of being, as he commonly is, compelled to confine this kind of exercise to his home or his lodging). And here, the best plan is to propose to himself designs in certain given styles of certain dates and work them out, with attention to the known details of the style chosen. General plan and composition may be practised in this way with sufficient scope for invention, while the endeavour to obtain correctness of detail in accordance with the style chosen will help to fix the characteristics of the style on the memory, and, at the same time, lay the foundation of a true feeling for refinement and consistency of detail. This latter quality of consistency is an important one, and though (as our readers know) we should be among the last to advocate mere copyism in architecture, consistency of treatment is essential to the good effect of a building, and can be best fostered and attained by the study of consistent and complete styles of architecture, before the pupil has learned to think for himself. The attempt to copy original designs occasionally, and of malice prepense, is very likely to result in mere oddity and grotesque; a fact of which we are not without illustrations. A very improving practice too, and a very pleasant one, is that of sketching imaginary architectural groupings and scenes, wherein the sketched may sometimes, even unexpectedly to himself, strike out hints and ideas worth storing up for future use. Details of ornament and decoration should also be studied; wherein Mr. Owen Jones's "Grammar of Ornament" will be found very suggestive and instructive, giving the basis and leading characteristics of each of the most important schools of architectural ornament; and the student will do well to note the ornamental details of the buildings which he sees in progress from time to time, and where which are most effective, and which retain their effect longest. We give these general recommendations to wards cultivating and stimulating the faculty of architectural design, where it exists. But as to the feeling for balance and harmony of composition, and the power of invention in plan, outline, or ornament, of this it must, in a great measure, be said, *Nascitur, non fit*; and those who are without it, and who are not naturally inclined to achieve it by study, though they may become good architects and useful practical architects or surveyors.

For of course we must not ignore the fact that architecture, though indubitably in its highest forms a fine art, is based on practical needs, and has its very important practical side: as to which we may be said that in the generation just passed away the practical view of the subject too much took precedence of the artistic, while at present there is some ground for saying that the reverse is the case. As to what degree of practical knowledge, and of what kind, is necessary to render a man "a thorough architect," it is difficult to say anything very decisive, the boundary of the profession being so very indefinitely marked. No one can, of course, possibly be even fairly proficient in all the subjects which are considered to come, or are, at all events, from time to time brought, into the architect's province; and the opinions of architects themselves, as evinced by their professional practice and studies, are very various on this point. A general acquaintance with mechanical statics and dynamics will be the first desideratum, though even this is a knowledge which many successfully practising architects do not, we imagine, possess. Thence we should naturally proceed to a more detailed acquaintance with the principal materials in which we have to work; of building stones and timber of various descriptions, their peculiar qualities, enduring capabilities, and resistance to atmospheric effect; knowledge which will determine which material should be used in special situations. With this should be joined acquaintance with the manner and principle as which various materials are worked and put

together, on some of which books there are several well-known treatises; but not, as far as we are aware, any that are very recent. We also Series contains several exceedingly useful little works giving the outlines, and sometimes a good deal more than the outlines, of various practical subjects, such as practical masonry, concrete, drainage, &c. A proper knowledge of the method of working materials will prevent the young architect from using a material in a manner and in situations unsuitable for it, and enable him to choose materials in a doing—this is a very important point; for we have known builders of some pretensions, when not sufficiently looked after, put together masonry as if it were joiner's work; and as to joiner's work done to imitate masonry, that is, alas! an everyday occurrence. What we should call a true feeling for the right and truthful use of material, is one of the qualities which distinguish a genuine architectural talent from a jerry builder, or a mere draughtsman: in connection with this subject the student may derive some hints from a paper on "Design in Relation to Material," in the *Builder* for January 2nd, 1869. The study of drainage and ventilation, what has been done and what remains to be done in these matters, must receive attention, and on these and other practical matters we should impress the student with the importance of keeping from the first a note-book in which to enter whatever special observations he may be able to make on practical points, both for impressing them on the memory and for future reference; remembering Bacon's aphorism, "that reading maketh a full man, writing an exact man." There are of course other materials besides these, and the original, the materials of which must be taken account of, as terra cotta, tiles, slates, and other roofing materials, and methods of roofing, cements and plaster (the latter, let us say, to be used mainly for practical purposes, and very sparingly, if at all, in decoration). Then the architect, if he commence operations with a commission in domestic architecture, will find that his client expects him to be deep in the mysteries of cooking ranges, heating apparatus, bell-hanging, and other like matters of permanent house furniture, of which the more he knows the better, certainly; but concerning which we have our doubts whether they come so completely and decisively within the architect's province as is commonly supposed: at all events, he cannot compete with the tradesmen who manufacture them, and the workmen who fix these things, in practical knowledge of them, and must, in the end, trust a good deal to their honesty, though able to direct them as to general principles and methods, and as to which Professor Kerr's work on "the Gentleman's House" will give useful information. A more important part, in our view, of the domestic architect's duties should be the ordering and directing of the design of the furniture and fittings in any house of any importance. Commonly, the architect's aid is dispensed with just at this point, as that too often the principal rooms of the mansion which he has designed with care are made hideous with upholsterers' designs of unmentionable nature, and bearing no relation whatever to the general design of the house. Architects should study furniture design and decoration, and endeavour to get this part of the business more under their control, which would be a first step towards seeing something more artistic displayed in the show-rooms of our leading manufacturers. Acquaintance with the use of the theodolite, and some degree of practice in surveying, may be considered part of an architect's education, as he will often find it necessary to survey a site himself, though we do not recommend the general union of the professions of architect and surveyor, which are, in fact, quite distinct in their nature and objects. In a general way, a knowledge of the leading facts and principles of chemistry (on which several published works supply adequate information), will give the architect greater certainty and facility in dealing with and providing for various practical questions of material, and a knowledge of geology in general, and of the particular strata of the district in which he is about to build, will not carry him "too far a-field," but will materially assist him often in the important duties of providing firm foundation, adequate water supply, and efficient drainage for the building he is about to erect. In such matters, however, experience and observation must go hand-in-hand with theory.

As to proficiency in drawing, in the method

of exhibiting ideas upon paper, a thorough knowledge of and aptitude in perspective drawing is, of course, necessary; for an architect should, in fact, design in perspective in his brain if not on paper; the geometrical elevation being the necessary method of putting his design into a workable and measurable form. This is, in fact, almost purely a matter of practice and habit; and for although elaborate treatises on perspective have been written, giving numerous examples of the method of dealing with various objects, &c., there is, in fact, but one problem in perspective drawing viz., to find the apparent position on a plane of any given point on a geometrical plan and elevation, and any student who has once learned this can put it in practice in any form. After knowing the general principle of perspective, sketching from existing buildings will be one of the most certain and ready methods of attaining ease and rapidity therein, as well as being a most useful practice in calling the student's attention to details in the working out of a design which, on a mere inspection of the building, he would miss, in nine cases out of ten. He must, however, if he is able to make sketching tours, beware of misapplying the knowledge and practice so gained, and of working up in his own designs, without due consideration, materials which are only fitted for the positions in which he has sketched them. Sketching is not to supply materials for "cribbing" from, or to supplement, but only to stimulate the architect's own exercise of thought. The use of water-colour in getting up views of buildings for committees and for other purposes, is of a certain value, and is a very pleasant study in itself, but of less practical importance than is sometimes supposed, as it does not necessarily tend to any furtherance of the capacity for strictly architectural design; on the contrary, a showy water-colour drawing is often made available to conceal various defects and lapses of design. The power of sketching the human figure with general truthfulness and spirit will enable the architect to do the sculptured decorations of his building in a presentable manner, and will further put him in the position to consider, in conjunction with the sculptor, the nature and character of the design which will be most suited to his building; but let him not be carried away with the idea of being sculptor (or carver) and architect in one. Any sculptor or painter will assure him that to design a large figure-subject well and correctly requires an arduous study given to that one object, if he do not believe this, let him look at some specimens of architects' sculpture which are occasionally to be seen in drawings and in buildings (chiefly Gothic), and if these do not convince him, our caution is in vain.

In putting together some general hints on architectural study, suggested by the request which we have placed at the commencement of this article, we have purposely abstained from referring to the many facilities which exist in London for self-education, in the way of museums, exhibitions, lectures, and so on, as we are writing for the students of this country generally, and not for the metropolis alone. In conclusion, let us add, that no degree of general education which does not involve neglect of special education, will come amiss to the young architect; a knowledge especially of one or more of the continental languages will often put him in the way of getting more extensive information on subjects connected with architecture than he would otherwise obtain, and may qualify him for a commission which he could not otherwise conveniently carry out. It has been truly observed by an eminent writer* that there is no line of study which, if taken up thoroughly and carried out to its furthest limits, will not bring the student into contact with the widest fields of human interest and knowledge; and of no profession can this be more truly predicated than of architecture.

Velocipedarianism.—According to the *Liberal*, a bootmaker has just invented a boot with small wheels, which will enable us to go as rapidly as a horse with the facility of stopping at a moment's notice. What is this, however, but skating on wheels, which we have all seen at the Crystal Palace or elsewhere. It is a curious and no doubt pleasant recreative mode of locomotion, or velocipedarianism, but can it be made suitable to roads? That is the question.

* Mr. Froude, in his "Inaugural Address at St Andrew's University."

DRINKING FOUNTAINS AND PURE SPRING WATER.

It is a curious thing to note how the great powers that be sometimes go about things. There are two important questions at this moment before the British Parliament, of most momentous import to the whole British public: one is, that the said public shall be from henceforth compulserily educated; and the other is, that intoxicating liquors generally should either cease to be drunk altogether, or, at least, the sale of them confined to very fashionable localities; and, to help to wean the poor helpless public from the temptations of alcoholic liquors, a society some time since sprang into existence, and a series of fountains, as they are termed, have been put up by it in all the poorer districts of London, for the purpose of supplying people with what the Drinking Fountain Society call "pure and wholesome water." Now, it is a curious fact, that all the fountains are carefully boarded up and the water-supply from them made to cease during the winter months and cold weather; indeed, just at the time when the sale of spirituous liquors is at its maximum, "to keep the cold out." Why is this? Surely the public, the lower orders, must drink in the cold weather as well as in the hot; and the temptation to get into the habit of drinking great, if not greater, in the cold of winter as in the heat of summer. But so it is, and doubtless it is all right and proper; but as the season has just commenced when all these boarded-up fountains are uncovered, and the water from them allowed to flow again (at least a day, for we have found them shut up through the night, even in summer), it seems worth while to say a few words about these drinking-fountains, on the fountains themselves, architecturally, and on the sort and amount of water which they supply. For this purpose we would call attention to the recent elaborate and instructive Report, which as an appendix, on the subject of the London water supply: it would seem to call for some notice beyond what it is likely to meet with at the hands of those who look on it only as a sanitary matter. We are well called a practical people, so that the event of any change for the better taking place, either in the kind of water supplied to Londoners, or in the mode of its supply, we may be quite sure that art will come in but for very meagre notice, if for any at all. A few words, therefore, may not come amiss about it before anything is finally determined. To begin at the beginning. *Rain*, says the "Report," is the source from which all water-supply is obtained, and there are three modes by which the water thus provided by nature is made available for the supply of towns. We ask attention to them. The first is to bore down into the porous strata, and thus to come directly to the purest of all water, that which springs up into wells, and which sometimes reaches the surface and bubbles up as springs. Secondly, that which is obtained from rivers, and which is the natural drainage of a country. The Thames thus drains not less than 6,000 square miles of land, i.e., the rainfall over this area falls into the river bed. The third mode is by forming large reservoirs in hilly districts, and then to collect and store up in them the rain or surface water, this being conveyed by pipes to where it is wanted. Do it observed, that none of these methods contrive the collection of the purest water, the water being necessarily mixed with earthy and mineral matter by the fact of its passing through or over the ground on which it falls. It seems, therefore, a pity, as we have before urged, that some plan has not been devised for collecting pure rain-water from the tops of houses into tanks or cisterns. This would be a fourth mode of water-collecting. Rain, it is said, is the very purest and softest of all waters, it being the result originally of simple evaporation. If a glassful of Thames water be simply allowed to settle so as to become clear by the sand filtering to the bottom of the glass, this water on being tested will be found to be soft and almost like June rain-water. Or, should any one be bold enough and hardy enough to bathe in the river, he will find the water delightfully soft and pure,—pure barring the mud. If, then, after these two simple but bold experiments, the same person will dip into a common plunge-bath, and venture to taste the water from one of the common drinking-fountains, as they are so potentially called, he will discover that though the water be said to come from the same source—the Thames, the

bath water will feel like pounded ice, and as hard; and the taste from the "fountain" like unto some diabolical semi-warm mixture of he knows not what; as hard as cast iron and as palatable! What, therefore, would we ask, do the water companies do with the water? Why not leave it alone, and allow the pure river water, after depositing its mud to find its way into baths and fountains in its natural state?

But it may be asked, why take the "river" water, with all its impurities, about which there is so much in this Report, all the great scientific authorities contradicting each other about it, no two of them seeming to agree? Now, it so happens, says the Report, that no less than two-thirds of the Thames basin consist of porous and permeable strata, such as chalk, oolitic limestone, and sand and sandstones of various kinds, all of which receive and absorb a large proportion of the rainfall, and store it up in vast subterranean reservoirs, forming well and spring water, water made pure and palatable by great natural processes, costing nothing but the setting at it, by the sinking of wells and pump-pipes. This grand natural process reduces organic matters to a minimum, and mineral matters to the smallest amount, is independent of the seasons, gives uniform temperature, and the filtering process as perfect as can be; for, "as it is shown," shows, from 50 ft. to 300 ft. thick of sand, or limestone, or chalk, are gone through. It is something wonderful what an amount of evil is put up with by the poor British public. There is all this exhaustless supply of the purest and best of water under our very feet, and sending only the most common of mechanical appliances to come at; yet it is never even thought about, while the substance called water in common use is really unfit for any purpose whatever, either for washing or drinking.

But there is another aspect of this important subject which will, if not at present, at least some day, meet with the attention which it is worth. If we travel into countries and towns uncivilised and barbarous enough, such as Constantinople, or Damascus, or even Utah, on the Salt Lake, it will be found that not only is there a plentiful, — may, magnificently liberal supply of the purest and most delicious of water, — but no pains and expense have been spared to render this supply not only complete, but pleasant to the eye. The reader will see nothing of this in the Report. London and Constantinople or Damascus are wide enough apart; but in the last-named city the scenic beauty, the utilitarian and beautiful. Instead of the little dribbling, wickly streams which flow from our drinking-fountains, and which take their time to fill a wine-glass, and which in most cases spout out of a foot or two of paving-stone into a shallow basin, — the fountains of a common dinner-plate, the fountains to be found in those far-off barbarous cities are really works of art, to be seen a mile off, with water enough to be at least seen and heard as it falls; a something to pause to look at, and a happiness to see. A photograph of a beautiful fountain worthy of the name, near the "Seven Waters" of Asia, and quite a gem of Moslem architecture, may be seen in Gautier's Constantinople, together with another, — but far too big and luxurious for our shoekeeping nations, — that of the fountain of the Sultan Selim. Constantinople, be it observed, is a barbarous and almost a waste place, and a remnant of old-fashioned times and customs and work, and unhappily modern improvement will consist when it thoroughly seizes hold of this place, in doing away with all these quaint "water supplies," and substituting "taps" everywhere. Let the intelligent artist reader be contented to gain mainly the moral lesson. London improvements would seem now to consist mainly in pulling down as many houses as possible, and forming large, awkward, and even waste spaces: would it not, we would ask, be a good plan to occupy some of these with drinking-fountains worthy, at least, of the name, with the water supplied from the lower strata as mentioned in the Report, — i.e., with well or spring water, of which there is such an inexhaustible supply. Such water is always pure, drinkable, and of even temperature, and constant in quantity. In these fountains the water for which they are constructed should always be visibly — i.e., it should be seen that the fountain was for the water, and not the water for the fountain — large open basins and a perpetually-running stream. It would be difficult to devise a plan more likely to be acceptable to the public, especially

the poorer and out-door public. It would be easy to name some score of open-sided "wells" — "fountains" such as we have indicated would be useful and desirable. Nothing can be worse than the now so fashionable mode of improving London. Everything is destroyed, and there is nothing in idea to replace the old plan of streets, but they are thought to have been, or are. We may, before it is too late, learn something from Constantinople and other really well-called cities, built and planned so long before science and "art principles" had any existence, but yet at a time and by a race of men whose ways we may well try to recall and humbly imitate and follow. There is, surely, a long distance between a Turk and an Englishman; and if the Sultan and his subjects are to be civilised by the adoption of English ways, let us borrow something from them before it is lost for ever.

One other thing there is in this water-supply question which ought not to pass without notice, as it is not a little curious, and shows the universality of the laws of nature. Everybody has heard of the impurity of London river-water, one way or another; but the Report says, that taking properly-filtered samples of Thames water, we shall see an "extraordinary regularity in the aluminous character of good town waters during summer months." Thus it would appear, that Thames water, Manchester water, Edinburgh water, and Glasgow water from Loch Katrine, show in a most remarkable way the great constancy in the amount of such impurities as ammonia. Thames water gets even sewage. Manchester water comes off the workhouses of Derbyshire, so it is pure. Edinburgh water, from springs some miles from the city itself, yet is the per-centage of ammonia nearly uniform. It is certain, therefore, that there are great natural processes at work, always tending to equalise the quality of all natural water that is freely exposed to air and light.

EDINBURGH PROSPECTS.

WHEN George Heriot, goldsmith to James I., left his means and estate for the purpose of building and supporting an institution for the maintenance and education of poor boys in his native city, he set an example which has been followed by numerous imitators. Such is the plethora of wealth devoted to this purpose in Edinburgh that it has come to be looked upon as an evil, and means are being taken with the view of breaking through the monastic system, which is found to have a baneful effect upon the boys, and for giving a wider scope and aim to those richly-endowed institutions. Our readers will be surprised to learn that the endowments of these pauper palaces nearly equal in amount the whole annual endowments of the city metropolitan. Besides being harmful to the boys, the use of these institutions has a demoralising effect upon well-to-do parents perfectly able to maintain and educate their offspring. In short, the building of pauper palaces has reached its acme, and those wealthy nobodies who wish their names to be perpetuated in great structures must look for some other outlet. We may call the attention of such to the fact that Edinburgh has no town-hall, public library, or public baths, — deficiencies we hope are long to see supplied in this or some other way.

No city of its beauty and importance that we know of has so few public edifices, and architects worthy of admiration than Edinburgh. Trinity Church disappeared to make way for the North British Railway Terminus; Holyrood Chapel is in ruins; St. Giles's was more a ruin; and the modern churches, — Classic and Gothic, — are mediocrity in the extreme. The state is likely to be remedied by the munificent bequest of the late Miss Walker, of Coates, to the Episcopal Church of Scotland. The estate left by the deceased is estimated at about £50,000, and, after paying all preliminary calls upon it, a sum of upwards of 300,000 will be at the disposal of the trustees. The will of the donor consists of building-ground at the west end of the city, from which an excellent site, — at the western termination of Melville-street, — has been reserved, and on this is to be erected a cathedral at a cost of not less than 40,000.

Provision is made for the officiating clergy; and in order to procure a suitable design, and for six architects are to be asked to compete. Other churches may be built and endowed by the trustees, the first of which to be at the east end of the city, to supersede St. James's, we

premises, which has an ordinary street front, in union with the line of houses of which it forms a part.

At the southern suburb of Grange a new church is in course of erection, intended to commemorate the name of the late Dr. James Robertson, professor of church history in the University of Edinburgh. It will occupy a commanding site at the angle of Kilgraston-road and St. Andrew's-road, and is to be seated for a congregation of 500. It is to consist of nave and transepts, with a spire, 150 ft. in height, in the centre of the west gable. It is to cost 6,000*l.*, and the design is the first realised one, in this branch of art, of Mr. Robert Morrison. We shall watch its progress with interest.

A meeting has been held with the view of taking steps for the erection of a suitable memorial of the late Sir James Young Simpson.

A subscription list is also open to raise funds for a monument to the late eminent Divs. Dr. Cairnes.

The Albert Memorial is still in the hands of the sculptors: we hope the question of site will be reconsidered. The Queen's Park, at the foot of Arthur's Seat, is about the last place where we would think of placing an equestrian group. The late public act of Albert the Good was to lay the foundation stone of the Industrial Museum. No more appropriate site for his monument could be found than in front of that building when the new street shall have been opened up.

KNIGHTSBRIDGE BARRACKS AND HYDE PARK.

BETWEEN the Corner and Albert Gate, and thence to the Guards Barracks, a distance of nearly one-third of a mile, the narrow border, varying from 100 ft. to 30 ft. in width, discloses the most perfect and tasteful example of shrubbed landscape gardening. With every difficulty to contend with,—a dull boundary wall, the backs of mean houses, and ranges of lofty, wide-spreading trees,—simply by raising and varying the surface with grassy hillocks and flowering shrubs, this hitherto repulsive margin has been transformed so as to excite the admiration of promenaders; and, together with the vicinal dell at the foot of the Serpentine, has become a thing of beauty. Here, however, all enchantment ends; for onwards, nearly a quarter of a mile as far as Prince's Gate, the Cavalry Barrack, with dull walls, gates, and open windows, borders the drive, without any intervening space. Sentinels at the entrances patrol the route; and, save that the officers' quarters stand back, presenting something of a more decent elevation, any factory or antiquated workhouse would form a boundary as appropriate to this district, which ought to be the promenade of fashion.

From the barracks westward to Queen's Gate, a little over a quarter of a mile, the park border is beautifully timbered, forming a wider margin to the drive; and here a shrubbery continued to the lovely flower walks, enclosing Kensington Gardens, would perfect the whole circle, and prove a real solace to the walking community, as well as those who ride and drive; but so long as the barracks, which border the way for nearly 400 yards, occupy that position, it would be idle to attempt any further improvement; for, in fact, the whole range of carriages on the long driving turn back from the Serpentine Falls towards Hyde Park-corner.

Our metropolitan landscape-gardeners certainly deserve public gratitude for the perfection of their floral display, and that under all the disadvantages of London, and the scarcity of the flowers, and the admiration they attract, are efficient evidence of the value of their labours. They have made a little Eden of the site of the old demolished guard-house, opposite the late toll-bar entrance to Kensington; and now the whole Park Circle, save the interval from the barracks to Queen's Gate, has become a place of resort the most agreeable and refreshing.

The area covered by the Knightsbridge Barracks is rather over 4 acres: they occupy a quadrilateral space of 220 yards by 60 yards, and then the stable court a plot of 153 yards, diminishing in width to 30 yards at the northern extremity. Long since, on an inspection of the quarters, the building and its arrangements were condemned as unsuitable to troops. The first-floor of dormitories, built over the stables, is but 8 ft. in height. In front it looks into the most important highway of the metropolis; in the rear the windows open upon the fashionable drive, and the troops

lounge and recline in sadness in full view of the passing traffic.

When first built, perhaps 160 or more years back, the location was no doubt appropriate: it was then ultra-urban, and on the road to the Royal Palace: it is now closed in by a dense population; and, as in all instances of the kind, the vicinage is tainted by night ramblers, and the low traffic of property there, save in public-house (of which there are seven within 800 yards' distance), contrasts remarkably with the mansions and sites on the Kensington-road line.

At present the south side of the park has become of twentyfold value, excepting only this taint. The line where the barracks are constructed the public highway along its whole course; and being in a densely peopled neighbourhood, it is not so suitable for troops as a position somewhat more distant, such as Chelsea, for instance, where the infantry guards have been for some time advantageously stationed. There they have certainly better barracks, good air, and more appropriate position; and, if not too far for infantry, it cannot surely be an inconvenient quarter for a cavalry regiment.

Taken in a financial point of view, the ground occupied at Knightsbridge, if sold or let for building, would realise an amount sufficient to erect barracks for the whole regiment of guards; whereas the present building accommodates but 430, and new barracks, near the infantry guards, would give domestic comforts to the men, while their withdrawal from the park would at once trebly enhance the value and change the aspect of the richest and most precious point in London,—the range between Knightsbridge and Kensington.

There is still another consideration which, as it affects the whole population, ought to have some weight, and that is the necessity for widening the Great Western-road, and the formation of a park side-walk near the shade of the fine range of trees extending along the whole south road to Kensington. The surrender of 18 ft. or 20 ft. of park border, preserving the forest trees intact upon the footway, and throwing the present external footway into the carriage-road, as recommended in last week's Builder, would in no sense diminish the effect of the park, whilst it would enlarge the driveway, on an average, 13 ft., and thus efface the improvement so earnestly desired by the Commissioners of the Hall of Arts, and by every resident of the fine quarter. The rapid advance of the Hall of Arts, of the South Kensington Museum buildings, and of numerous residential structures which now occupy the important north-western district, demand the occupation of an improved road and footway. The population has increased; and as the city spreads, every other form of pleasure and park-privilege becomes of vital importance. When the Kensington Guard Barrack was demolished, Government converted the space to a garden. A similar dedication to public uses of the Knightsbridge Barrack site would, doubtless, meet with general approval and gratitude.

CHURCH OF THE HOLY INNOCENTS, FALLOWFIELD, MANCHESTER.

THE corner-stone of the Church of the Holy Innocents, at Fallowfield, was laid on the 4th inst. by the Rev. Canon Woodcock, in the presence of the Grand Lodge of East Lancashire, by Brother the Hon. Wilbraham Egerton, M.P.

The site of the new church, which has been given by Lord Egerton of Tatton, in addition to 1,000*l.* subscription towards the building fund, is on the north side of the new road, a mile from Fallowfield to Chorlton, and adjoins the Didbury high road. Space is also provided for the erection of schools and a paragonage. The church comprises a nave, about 80 ft. by 25 ft. internally, divided into five bays or arches, 17 ft. wide, and about 62 ft. high from the ground to the ridge. On each side of the nave are radiating aisles about 13 ft. wide. This portion of the church is lighted by a two-light window, having ornamental heads in each bay of the aisles, and by a large window of bold design in the west end of the nave. The clerestory consists of lofty coupled square lights, with cusped heads in each bay, the piers being supported by the intermediate roof piers. From the moulded corbels at the foot of the hood moulds to the nave arches rise wall-shafts, with moulded caps and bases, which support the roof principals. The chancel is about 39 ft. long and 23 ft. wide, and is raised above the floor of the nave by several steps,

which occur in the centre of the chancel-wall. The chancel is lighted by three clerestory windows on each side, and five in the apse, which is on plan a semi-decagon below and a semicircle above. On the south of the chancel are two moulded arches, opening into a side chapel or aisle, which is also connected with the south aisle of the nave by a single arch. On the opposite side of the chancel are two apses, the wily organ-chamber, with arches opening into both chancel and north aisle of the nave. The pulpit is placed at the north-east corner of the nave, touching the foundation-stone. The font is near the south porch, at the west end of the south aisle. The tower, which forms a second porch, and a spire, are at the east end of the south aisle, next to the chapel, and have been most carefully designed with reference to their appearance when executed. The exterior of the building will be executed en pierre point, with stone dressings to windows, &c., and the window-tracery may be of Berlin red terra-cotta; the main internal columns and arches to be worked in red Ranmore stone, with white stone for caps and bases. The church will accommodate about 700. The builders are Messrs. Ellis & Hinchliffe, and the architects are Messrs. Pries & Linklater, of Manchester and London.

SOMETHING MORE OF GLASGOW.

THE majority of the city graveyards in and about Glasgow are in a very wretched condition. The Necropolis is very well looked after, as are two or three more minor ones, but we have visited a few which are simply a disgrace to any civilised community.

Extra-mural burial in Glasgow must become the order of the day. In a Roman Catholic burial-ground "Lairs" have been purchased and paid for, and yet others besides the owner's family and relatives have been buried within. A mean, money-grubbing, and unchristian desire has been shown on the part of those who receive the burial fees in the graveyard, with an utter carelessness and heartlessness demanding censure if not reprobation. Two or three miles out-side Glasgow, at a place called Dalbeth, there is another Roman Catholic burial-ground, which was colonised a few years ago. There are graves here, let us say as charitable pits, into which unchristian humanity has been carried and shovelled down, not unwept by some.

"But unheeded and unseen."

Poor Pat and poor Sandy have gone down here through infernal traps in deal boxes, or coffins if you will, with a few shavings for their shroud, but no *De Profundis* for their souls. It was good enough for the poor, but for the others could say for it they would have it the same as others." So runs the refrain. There are some natures who will speculate on making fortunes by the dead as well as by the living, and who, to use the words of Wordsworth,

"Would peep and peep and botchise
Upon their mothers' graves."

The laying out of old city graveyards, and making these places worth visiting instead of avoiding, making them contribute to the beauty and health of their locality—has not yet been attempted in Glasgow. London has, however, given a precedent, which may well be followed out with advantage.

Wasson cemetery, which has done so much to elevate the taste and feelings of the poor in the low quarters of London of late years, is an occult success in Glasgow. We looked in vain through the dreary passes of Glasgow for these bright oases in the desert, but found them not. Where there is a love of flowers there cannot be a love of filth.

On the north and south sides we noticed several old thatched structures, and some of these are in the vicinity of factories, where a spark at any time might, during the night, do the work of an incendiary, and result in a conflagration and loss of life that the city of Glasgow would never forget. These thatched houses on both sides of the Clyde ought to be at once condemned and removed; but we doubt if the sanitary authorities of Glasgow at present will dream of touching such picturesque bits on their Gothic canvas, as they are so exquisitely charming and so highly inflammable.

At Whitechapel, a few miles out, there are some self-contained dwellings in course of erection for the working-classes. We may have occasion hereafter to say what we think of them. Of that class within the city we have spoken with truth and without exaggeration.

The present City Railway construction through Glasgow will not add to the beauty of the city, though it will certainly add to its prosperity. But we do not see why the underground system should not be attempted, as it could be with every chance of success. A tunnel under the Clyde, on the line of the Bromley, will also be soon, if it is not at present, a necessity.

CONDITION OF LINCOLN.

Sir,—Under the head of "Stagnant Lincoln," your last week's issue contains a letter that requires contradiction.

There are no dykes in Lincoln or its immediate vicinity. The embank is low, capped on the summit with the coille, from which the cathedral, the castle, and other stone buildings are erected. The lower portion is covered by an alluvial deposit of sand, some two yards in thickness.

The Fosse, sand, and line clay are extensively used for building purposes and for brickmaking. There are no dykes filled with stagnant water. The Witham, a running stream, delivers into a navigable pool called the Brayford, which also receives the waters of the Fosse, a canal cut by the Romans from the river Trent at Wragby, to the Witham at Lincoln. The Fosse dyke is connected with the Trent by locks; and as the passage of every vessel through the locks necessitates the issue of a large body of water into the canal, it cannot be called a stagnant water.

The Brayford pool is bounded on two sides by wharfs and warehouses, on the other by the railway. The Fosse, and Witham, flowing through it, run down to Boston. Locks are placed at their exit from the city, to enable vessels to reload upon the wharfs along their course.

With the exception of the cow towns that have sprung up in the recently-developed iron districts, few places have progressed so much or kept so well up with the times as Lincoln; neither does the writer know a prettier place. Approached from any side it is a splendid picture. The blending of the various tints of the slate, tiles, stone, and bricks in the ancient and modern buildings, with the forest and escarpment of the hill, mixed with the foliage in the grounds and gardens, is beautiful.

Along the edge of the table-land are built the Cathedral, the County Hospital, the Castle (including the county prison and Ancin Courts), the Lunatic Hospital (where the system of non-restraint was first practised), the Penitentiary Female's Home, the Workhouse, and the N.L. Militia Barracks and Store-rooms. The city Assize Courts and prison are built lower down; and on the opposite side of the valley stands the County Poor Law Union.

Lincoln is the metropolis of the portable engine and agricultural implement trade. Its four principal factories employ several thousand work-people, whose productions are sent all over the world. There are also two large chemical works. An extensive trade is done in flour, malt, and grain. An excellent cattle-market is held weekly; and five lines of railway radiate from the city.

The assertion that the Builder is scarcely known in Lincoln is simply nonsense. Daily papers are brought in from Nottingham, Leeds, Manchester, Hull, and London; and the first at five a.m., the others in due course as the trains arrive. Then there are the evening papers from Manchester and London by last trains. Three local newspapers are published and well supported in Lincoln. The Mechanics' Institute and Reading-room has been established many years with great success; the terms are low, and it is well attended.

A school of art was started a few years since, and its pupils rank among the highest in the Government reports. In the Grammar-school are educated many scholars, at a moderate charge. A fair proportion of them have obtained university distinctions, two recently at Cambridge.

An Act of Parliament was obtained a short time since, authorising the sale of some acres of common land, cut off by a railway. The proceeds were spent in draining, planting, and improving the remainder, and a good class of houses are being erected on the land sold. Another Act now awaits the royal assent to convert a further portion of common land into an arboretum, a strip along the top to be sold for the erection of a superior class of villa residences. A large balance accrues from these

sales is invested, and furnishes small annuities to aged householders and the freemen.

All the churchyards are levelled, planted with shrubs, and enclosed. The cemetery-grounds are beautifully laid out, and kept in admirable condition.

Owing to the increase in population by the development of the local trades, original shares of the Waterworks Company, Gas Company, Corn Exchange and Covered Markets Company, and Bank are very valuable.

Workmen's cottages are in great demand, many being bespoken before the roofs are on. The following are some of the principal works now in hand:—New goal for the Lindsey division on the west side about 300 prisoners; (the present one to accommodate 1,000, the other 500, sisters; Wesleyan schools, new infirmaries at the work-house, a private estate of some four or five acres is laid out, and villas are being built upon it.

Tenodors are accepted for pulling down the present Baptist chapel, and replacing it by a larger. The guardians have accepted tenders (about 1,300*l.*) for improving the sanitary condition of the workhouse, by altering the privies into water-closets, remodelling the drainage, and constructing tanks for filtering the sewage.

Between 3,000*l.* and 4,000*l.* were recently granted by the county magistrates for the purchase of the waterworks, and arrangements for conversion of the sewage from the County Poor Law Lunatic Asylum.

Market days are attended by a class of farmers second to none in wealth, appearance, and intelligence; a large influx of their servants visited the city last week. May-day time they were respectfully dressed and well conducted; and to exemplify their precedence, in addition to their large purchases of drapery and other goods, 1,700*l.* were paid into the Lincoln Savings Bank by them in one day, exclusive of what might be paid into the Post-office Savings Bank.

When the new Lindsey prison is completed the few prisoners in the city goal will probably be confined therein, the city assize courts and goal removed, and the site appropriated for a new town-hall which is talked about, and is much wanted.

In passing through the city the river receives much of the sewage; and although it is flushed occasionally by means of the sluice-gates at the Brayford, a proper system of drainage is required. This is only a question of time: the Corporation have three schemes, by eminent engineers, and when the learned men of the city settle upon the best method of disposing town sewage, that method will doubtless be adopted in Lincoln.

The want of a row of trees along the high-street cannot be construed into an aversion of the citizens to foliage in its proper places. If a man like the church there is no reason why he too should be beside its ridge. The Witham level is too low to admit of a continuous stream of clear water flowing from it along the street channels; and I fear your correspondent, "G. W. G." is not a ratepayer, or he would have reason to know that the Local Board are doing something.

A LINCOLN HOUSEHOLDER.

WIND PRESSURE ON ROOFS.

In an article on this subject, the Engineer says:—

"Having ascertained the conditions of strains due to the uniform load upon the various parts of the roof, and tabulated the results, let another table be compiled showing the effects of a partial loading, and then the necessary counterbalancing can be introduced. But there yet remains a very important element of stiffness to be added, viz., the wind ties, these ties, if required, not only to assist in resisting the external violence of a storm or hurricane, but also to prevent the pressure from underneath literally 'blowing up' the roof. If the wind once gets 'well under' a roof nothing but the fact that the greatest care and precaution has been bestowed upon its construction will prevent it from coming away. We have known an instance in which, from want of attention to the proper tying together of the principals, the whole roof was lifted bodily off the side walls and landed in an adjoining field. The storm continuing, the walls gave way also, and the great mass of roasting masters in their original condition amounted to 1,500*l.* The fault of most wind-ties is that they are not carried down low enough. There is no necessity for tying the principals together by wind-ties. They are already amply secured by the purlins and the whole covering in general. The point

to be aimed at is to tie them back upon the respective supports, so that the principals could not be lifted without taking the foundations with them. Basing our estimate upon the data already assumed for the maximum pressure of the wind, the upward force would be equal to 55 lb. per square foot, and would consequently lift nearly that weight vertically. Unless, therefore, the insistent weight of the roof per square foot was greater than the amount, it would at any rate be able to be seriously shaken by a force of that intensity. The aid, therefore, of some further mode of securing the principals is evident, as roofs of moderate, and even large spans, do not equal in weight the figures arrived at by observation for the maximum wind pressure."

The strength required to be given to a roof will be most accurately calculated by a due attention to those principles which theory dictates, and practice sanctions, but its rigidity and stiffness will be best provided for by experience, combined with a little of that "artifice" which every thoroughly qualified engineer knows when and how to employ.

SALISBURY CHAPTER-HOUSE.

Sir,—Permit me to state that I ascertained last autumn that the decay of portions of the ornamental wall-painting, inside the Chapter-house of Salisbury Cathedral, is most certainly owing to the effects of damp. I was told that exposed parts of this ornamentation owe their permanence to the use of a backing of slate.

A. H. GENT.

LABOURERS' COTTAGES.

ARCHITECTS WHO KEEP THINGS TO THEMSELVES. DECENT dwellings for farm labourers are being built on the Darnham Estate, near Bridgworth, for the Rev. F. H. Wolrybe Whitmore, at Caynham Court, Ludlow, for Sir Wm. Curtis, bart., at Rowland, Essex, for Sir Curtis Lumsden, bart., at Jernyres, near Bzmay, for Mr. R. G. Lister, and at Kirby Muxton, near Leicester, for Miss D'Oyly. These works are being carried out from the designs of Mr. Birch, architect, who gained the Society of Arts' premium for such designs. Each cottage will contain a living-room, three bedrooms, entrance-porch, scullery, pantry, fuel-store, piggy, privy, cesspit, and ash-pit. Architects who are afraid of having their plans published may take a lesson from these cottages. When Mr. Birch obtained the premium, he gladly availed himself of our pages for the wide publication of his designs. Another architect who was asked to afford facilities for the publication, about the same time, of his design for such cottages, was "no such a fool," he said, "as to give the public the benefit of his plan for nothing."

What was the result? Mr. Birch has been suggested for the country carriage as the place he had frankly thrown open, while the careful gentleman, who was "no such a fool," has never been heard of since.

NOTES ON THE INCLOSURE ACTS AND THEIR RESULTS.

A PAPER on this subject was read by Mr. Richard Hall, Vice-President, at the ordinary general meeting of the Institution of Surveyors, May 23rd inst., concluding it, it was resolved:

From the sketch of the legislation on this important subject up to this point, it will be seen that Parliament has fully recognised the great advantage of inclosing wastes and unprofitable land, and removing any rights that interfere with private cultivation. From common waste, heath, or other large tracts, have been inserted in the various Acts, in order to preserve open spaces for the public, and for large populations. Village greens cannot be inclosed, and recreation grounds and allotments for the poor may be set out, if necessary, in the cases of inclosures of waste land. Any proposal for dealing with common waste, heath, or other large tracts, have been regarded by Parliament with great jealousy, and in the year 1865 a Committee of the House of Commons reported on the best method of preserving to the public open spaces in and around the metropolis.

Their attention was directed to the question of the inclosure of portions of common "improvement." This process is authorised by an old Act of Parliament, passed in the reign of Henry III.,—20 Henry III., cap. 4,—and known as the Statute of Mortuor. It was intended to enable the lords of manors to inclose (probably

the purpose of improvement or cultivation) of the portions of the waste as were in excess of the requirements of the commons. The Committee recommended, amongst other things, that the statute should be repealed; at all events, so far as suburban commons were concerned.

In the following session, 1866, an Act was passed for the purpose of preventing the inclosure of commons, under the Inclosure Acts, within the metropolitan police district, 29 & 30 Vict., cap. 122. This measure also provides sanctions to enable persons interested in such commons to apply to the commissioners to prepare schemes for their management, which, after the observance of certain forms, is to be submitted for Parliamentary sanction. By the commissioners' report this year, it appears that applications have been made to them in eight cases, but no scheme has yet been completed.

In the present session, a Bill has been introduced to extend the provisions of the Act of 1866 to commons within certain distances of towns containing 5,000 inhabitants and upwards.

Last year, a committee reported on the subject of the public recreation grounds and allotment gardens, set out under the Inclosure Acts, and suggested some alterations in those Acts, with a view to enlarging the powers of the commissioners. This session, the Government has introduced a Bill, proposing that as much as one-tenth part of the whole value of any waste land shall be appropriated for those purposes; and giving the commissioners power to reserve a recreation allotment in the cases of common field inclosures, if the public have been in the habit of using any portion of the land to be dealt with for such a purpose. Common fields have hitherto been exempt from the condition. Rides and drives for the public may also be set out, and the assent of the local authority is required before any land can be enclosed within certain specified distances of towns containing 2,500 inhabitants and upwards.

The beneficial effects which have resulted from inclosures can hardly be estimated too highly. In the cases of common fields have been removed of the complicated rights and customs which so much interfered with their profitable cultivation, has increased their value in a very great degree; it has also enabled the owners to effect operations of improvement, such as drainage; and the new roads which have been constructed have not only benefited the land dealt with, but afforded improved communication for the public and the neighbourhood.

It has frequently had occasion to make valuations in parcels enclosed by my father thirty or forty years previously, and have found the value four or five times as great as it was at the time of the inclosure. But land is not only improved from an agricultural point of view; it is frequently converted into building sites; and some inclosures of common fields, which I carried out in the neighbourhood of Chesham, may be referred to as instances in which, probably, the value has been increased tenfold. I remember a small common field, property which was looked upon as of so little value that it was left quite uncultivated, and hardly possessed an owner; the process of inclosure soon changed its character, and since that time it has been built over.

The inclosures of waste lands have also exhibited very interesting results. At Framfield, Sussex, the quantity dealt with was 2,000 acres, and the lands in respect of which rights of common were exercised extended into seven parishes, and comprised some 12,000 acres. It was very generally thought in the neighbourhood, that the value of the whole of the waste would hardly suffice to pay the expenses. The results, however, satisfactory; for the portions sold to defray the expenses did not exceed one-eighth of the whole. Some of the land was comparatively worthless; but the prices obtained averaged about 20s. an acre, which was but little less than the price at which inclosed land had been selling.

I will not, however, weary you with instances of the improvements which are so generally familiar to us. Many members of the Institution can, no doubt, call to mind various interesting cases. It is satisfactory that in no single case within my own experience has the cost been so great as to render the inclosure unprofitable.

In reviewing this brief sketch, it appears that the working of the Inclosure Acts, under the superintendence of the Inclosure Commissioners, has very successfully carried out the intentions of the Legislature. The cost of inclosure has, probably, been reduced by as much as 50 per

cent; and, at the same time, the process has been accelerated and rendered uniform and certain. The interests of the public, as well as those of the poor inhabitants, have received their share of attention; and the present legislation is apparently tending towards the encouragement of the inclosure of rural commons, whilst it seeks to preserve open spaces for the recreation of large populations.

THE NEW WORKHOUSE FOR DARLINGTON UNION.

THE local Board of Guardians, towards the close of 1867, offered premiums of 40l., 30l., and 20l. respectively, for the best three plans of a model workhouse. In response 116 designs were forwarded, and an architect from London examined them, and decided in favour of "Nota Bene" (Mr. C. G. Adams, of Stockton), "Economist" (Mr. G. Stynes, of York), and "A" enclosed in a circle (Mr. W. Snowdon, jun., of Bishop Auckland). The Board decided to give the first premium to Mr. C. G. Adams, whose plans they accepted. Tenders for the contract were invited, and Mr. Joseph McCormick was announced to be the successful competitor, at 11,700l. The work has since progressed under the direction of the architect, and the supervision of Mr. W. Simpson, the clerk of the works appointed by the Board. It has now nearly approached completion.

The length of the front of the main building is 157 ft. 10 in. It has moulded brick bases and moulded brick stringing running along at the height at which commence the springing to the arch, with a face of black and white brick placed alternately on each side of the central part of the building. In the centre is the principal doorway, with columns, bases, and carved capitals, moulded semicircular spayed arch, &c., and carved representations of animals. The whole front and returns of the main building are finished with a moulded blocked cornice. The roof of the main building, and of the board-room, the porter's lodge, and receiving-wards are covered with Taylor's patent roofing tiles, and have the appearance of a gutter and ridge tile placed alternately. On the ground floor, at the east end of the main building, there is the master's room, 17 ft. 3 in. by 18 ft.; master's office, 18 ft. 6 in. by 18 ft.; infirm men's day-room, 20 ft. by 18 ft.; sick men's day-room, 22 ft. 9 in. by 18 ft.; and two infirm men's night-rooms, one 30 ft. by 18 ft. and the other 20 ft. by 18 ft. Similar rooms are allotted to the able and infirm women, in the west end of the building. Separate hanging staircases, having iron balusters and hand-rails, lead to the men's and women's night-rooms. The main staircase is composed of wood, with cast-iron ornamented balusters, and mahogany hand-rail. This leads to the first floor, which is occupied equally between men and women, similarly to the ground floor. On this floor is a staircase which leads up to the tower.

The infirmary, which is of considerable size, stands on the south side of the main building. It has a frontage of 77 ft. 10 in., and is 26 ft. in height. Attached to it are two wings, one at either end, which are each 49 ft. in length and 22 ft. 4 in. in height. All the walls and ceilings are plastered. The fever ward, which is also at the south side, is 85 ft. 4 in. in length, and 22 ft. 4 in. in depth. Attached to this building are a separate wash-house, laundry, and drying-room. The Board-room buildings comprise a porter's lodge, Board-room, receiving ward, vagrant's wards, clothes-room, drying closets, examining-rooms, with stone-breaking sheds, workshops, corner's and dissecting room, and nurse-house, all one story high. The whole of the buildings are supplied with heating apparatus. Water-pipes are laid all round the building, with fire-pipes inside and out. The ground is laid out for the service of the different classes in the workhouse.

The new workhouse will accommodate 250 inmates and 50 vagrants, whilst the one at present occupied has only accommodation for about 135 inmates. The sub-contractors respectively were:—For joiners' work, Messrs. Gargett & Sons; for slating, Messrs. J. & G. Wharton; for plumbers' work, Mr. T. Johnson; for heating apparatus, Messrs. G. Clough & Co., Stockton; for donkey engine and boiler, Messrs. J. W. Lewis & Co., Middlesexborough; for stoves, kitchen-ranges, laundry fittings, J. Lear & Sons; and for laying out the ground, Mr. J. Prior. It is expected that the original contract price

will be exceeded by about 400l. or 500l. for the additional works.

A new church is about to be built for St. Paul's district, and the first stone has been laid. The position chosen is a few yards further up Durham-road than where the present church stands, on the opposite side of the road. The total cost of the church, with tower and spire, is estimated at 4,100l. Of this about 3,850l. have already been raised, sufficient to meet the contract for the church, with tower and spire, but exclusive of paving and laying out the enclosure of the land.

THE NEW OPERA-HOUSE, PARIS.

In a former article on the French Mied we endeavoured to draw attention to the spirit of centralisation which is ever influencing the thoughts and actions of Frenchmen. We shall now try to show how the plans of French buildings are the organic outgrowth of this centralising spirit.

The new opera-house of Paris will suitably illustrate our meaning. A French playhouse postulates five requirements:—1. The Stage; 2. The Theatre Proper, comprising the pit, the boxes, the galleries, and the orchestra; 3. The Foyer, or public promenade; 4. The Manager's Offices; 5. The Approaches.

The puzzle, then, for the architect of a playhouse is to find a simple system of lines which will both satisfy the demands of the five main divisions of the house and the spectator's instinct of organic unity. If the architect be happy enough to hit upon such a system of simple and consistent lines, not only will he produce a practical and beautiful structure, but its erection will be easier to carry out, and will prove more solid than otherwise, because the walls, being in one line, can, so to say, be chained together.

M. Garnier's opera-house is an oblong rectangle, with projections or annexes in the middle of its long sides. Few geometrical figures are more regular and elegant. Roughly speaking, the house is not unlike a steamer balanced by her paddle-boxes. Two galleries run the whole length of the building on each side of it. These galleries, on account of their unbroken oneness, have a logical though unobtrusive beauty, which commends itself highly to the mind of a French architect. They form, indeed, a framework to the inner building, and thus bind up its five divisions in one majestic whole; they support the annexes so independently that they leave the spectator's understanding quite clear as to the subsidiary relation of these annexes to the main edifice.

In the opinion of French architects, such relations of parts must be distinctly legible in the general drift of the main lines of a building. Any more, and the French architect is not satisfied with impressing the voracious sight-seer with the purpose of every part, but he thinks he ought to plan every part, be it ever so subordinate to the main building and independent from it, so as to make that part neatly harmonise with the building by its leading lines and its position. In order to suggest the filiation of the annexes to the building, M. Garnier placed them symmetrically to the building's major axis, raising their principal walls in the prolongation of the principal walls of the house. By this simple system of lines the annexes seem to link arms with their parent erection, and thus the feeling of constructive unity is fully gratified.

But the question will be asked by Englishmen,—Is it always practical, is it always feasible to shape a part or a main division of a building to the requirements of geometrical unity? The Frenchman replies—certainly not; but the division of a building, which is most privileged to an eccentric individuality, i.e., to an individuality, the outcome of necessity, is the principal division. Now, the principal division of a playhouse is the stage, because the stage, without which all the other portions of a theatre are meaningless, is, even when deprived of supplementary buildings, quite sufficient for its intended purpose. Like the stage of a Punch and Judy show, the stage of a playhouse may be said to be the all-in-all of that playhouse. So the stage in M. Garnier's opera-house, occupies the whole breadth of the building, and is thus characterised by vast size rather than by special form.

Next in dignity to the stage is the Theatre Proper, with its pit, boxes, galleries, and orchestra. It fills the middle of the building, lies symmetrically to its major and minor axes, and

SOUTH KENSINGTON MUSEUM: CENTRAL PORTION.—DESIGNED BY THE LATE CAPTAIN FOWKE, R.E.



LECTURE THEATRE BUILDINGS AT SOUTH KENSINGTON.

Our illustration this week represents the facade of the new Lecture Theatre and Refreshment-rooms, which form the north side of the internal quadrangle of the Museum at South Kensington. The materials employed are mainly red brick with dressings, and enrichments of terra-cotta. The chief feature of the design is a deeply-recessed arcade on the principal floor, the facade being supported on columns of terra-cotta, modelled by the late Henry Sykes. The soffits of the arches are filled with white majolica, manufactured by Messrs. Minton & Co., of Stoke-upon-Trent. Figures holding shields of the same material are also introduced in the spandrels on either side of the circular panels in the arches recesses, and in the square panels above the door. The three circular panels all alluded to, are filled with glass mosaics, by Messrs. Salviati, Rast, & Simpson. The figures, which represent History, Poetry, and Alchemy, are executed in colored tessera, upon a gold background.

The door, which forms the central feature of the lower story, is in six panels, with figures of Newton, Davy, Bramante, Michelangelo, Watt, and Titian. It may be remembered that this bronze door attracted a great deal of notice in the Paris Exhibition. It has since been rightly gilt. The brickwork of the ground-floor is banded with four courses of moulded bricks, the intermediate portions being rubbed and gaged. The arch-heads of the large openings to the right and left of the central building, are filled with mosaics in mosaic-work. These mosaics were executed in the South Kensington Museum by the female students, the materials being supplied by Messrs. Minton, Hollins, & Co. The rectangular panels in the upper portions of the wings, and the large picture which occupies the tympanum of the pediment, were carried out in the same way. The upper story of the theatre building consists of a series of triple arches placed in square-headed recesses, the spandrels above the arches being filled with a diaper of red terra-cotta. The subject of the design in the pediment is the Exhibition of 1851. Four allegorical figures, representing the four quarters of the globe, receive from Queen Victoria wreaths and rewards, while the artists of the different countries bring their manufactures and produce to the Exhibition. In the background is the building. The figures are executed in buff tian, the Exhibition being black, and the groundwork of the whole gold. On the pedestals at the corners of the building will be colossal groups in terra-cotta, designed by Mr. Bale, a student of the Lambeth School of Art. One of these figures, manufactured by Messrs. Doulton, is already on the ground. The summit of the roof is surrounded by a perforated screen of cast iron, supplied by Messrs. Hart & Son. The terra-cotta for the buildings was made by Messrs. Blanehard, of Blackfriars-road, with the exception of the frames of the square panels, which were made by Millichamp, of Lambeth. Mr. Cawte, of Farnham, supplied the bricks; Messrs. Smith & Taylor were the builders; and, since the death of Captain Fowke, Lieut.-Col. Scott, R.E., has been the Director of Works.

ARCHITECTS' RIGHTS AND CHARGES.

THE DRAWINGS OF THE HOUSES OF PARLIAMENT.

Sir,—Mr. E. M. Barry's case is likely to go round the artistic world as one of extreme hardship to Mr. Barry himself, and of reproach to be hereafter attached to his name. Mr. Barry is a constant and, in principle, a reasonable claim set forth by political rulers that they should be allowed to complete their measures before they are judged and turned out. Why not adhere to the same rule with regard to artistic works and men? In the case, too, had a case of a similar nature to that of Mr. Barry, in the matter of the Ottawa Government Departmental Buildings. But the works had then so far progressed as not to suffer much by a change of architects; and this satisfaction was offered the profession in Canada, that a sacrifice was necessary. However, the architects, who were employed under commission, were not asked for any more drawings and details than had already been executed at the actual stage of the works. Would the lordly British Government be less magnanimous than a Colonial?

Englishmen should certainly look to it as a blessing that the chain of tradition was not

broken until the present day in the building of the Houses of Parliament, this son succeeding the father in the carrying out of the works—a boon which was not always offered by Providence in many other national piles which, as artists have often an occasion to regret, lack unity of conception and execution, causing sometimes a puzzle to the archaeologist and a sore to the conscience.

If we approach the question of economy which might have actuated Mr. Ayrton, we have here, by induction, another example of people ruining themselves through avarice. Artists will not grow on poor feed; and where is the man of talent who, in this age, would consent to seal his fate by making himself drawing on the board, and selling his productions as articles of commerce?

I herewith inclose a copy of the schedule of charges, &c., followed by architects practicing in Montreal, and, I may say, through the whole Dominion. It will go as another piece of evidence that any one entering our profession is made aware of his liabilities, and is expected to meet a certain treatment as a reward for his studies and labour, neither more nor less.

We, on this side of the Atlantic, earnestly hope that the Barry embroglio will be so adjusted as to accord with the rules universally adopted by the profession in England, Germany, France, and America.

Professional Charges of Architects practicing in Montreal.

	Per Cent.
1. Public buildings and private residences, commission on the cost thereof.....	5
2. Block of two houses of similar design, commission on the cost thereof.....	4
3. Block of three, four, or five houses of similar design, commission on the cost thereof.....	4
4. Block of six or more houses of similar design, commission on the cost thereof.....	2 1/2
5. Store and warehouse, commission on the cost thereof.....	5
6. Block of two stores or warehouses of similar design, commission on the cost thereof.....	5
7. Block of three or more stores or warehouses of similar design, commission on the cost thereof.....	2 1/2
8. Items of charge comprised in 5 per cent. commission—Preliminary sketch on paper, including drawings and specifications sufficient for an estimate or contract.....	2 1/2
9. Detail drawings.....	5
General superintendence (exclusive of clerk of the works), examining and passing the accounts, rectifying the errors, and making out extras and omissions.....	11
10. N.B.—The foregoing subdication of charges is only proportionally to stores, houses, &c.	
11. For the alteration of premises, the remuneration to be increased according to the time, skill, and trouble involved.....	
12. Total quantities from plan for detailed estimate, commission on the amount thereof.....	11
13. Measuring and valuing alterations for any amount under 1,000 dollars.....	3
Over 1,000 dollars and under 4,000 dollars.....	4
Over 4,000 dollars.....	5
14. For services by time at per day.....	10 dollars.
15. N.B.—All travelling expenses to be charged extra.	
16. No charge to be made for a rough estimate obtained by cubing out the contents. If a detailed estimate be requested by the proprietor, a charge therefor is to be made as above.	
17. An architect is bound, under the full percentage charge, to provide one set of drawings and one set of tracings, with duplicate specifications; it being understood that the architect is paid for the use only of the drawings and specifications, and that those, in the event of carrying out the works to completion, are to remain his property.	

The above was agreed on in February, 1865, among the last classes (1864) in the case, that Mr. Ayrton's claims as to the ownership of the drawings of the English Houses of Parliament would, in Canada, be resisted by the architect.

Montreal. A. LÉVEQUE.

THE COLUMNS IN S. SWITHIN'S, LINCOLN.

Sir,—I will not attempt to follow the quotation from the *Lincoln Gazette*, which appeared in your last issue, but simply give you a few facts. The pillars of the nave are of Ancaster stone, 2 ft. diameter of abnormal circular and octagonal section, containing an area in the circular ones, the smallest, of 433.009 in. The weight of the clearest and roof on each pillar I estimate at 60 tons, or 2,640 cwt. per inch of area. Mr. Huddleston, a local builder of some considerable experience, and a member of the committee, states that there are about 40 tons of walling on each on the north side, and 38 tons on the south side. To this must be added the weight of the roof,—not 20 tons per pillar, certainly,—so that my estimate is in excess of six. Now, if published tests of the quality of stone are worth anything,

and it is upon these only that architects can depend in calculating for weights, &c., I give you the following:—In the square made made by Messrs. Poole & Son, in October, 1865, on Bath stone, it was shown that a weight of about 80 tons might be considered safe per foot, some not showing damage until upwards of 120 tons per foot. The report of the Royal Commission states the cohesive power of Bath (Bux) stone at 5,813 cwt., and of Ancaster at 8,340 cwt.; and if Bath will carry 80 tons, Ancaster should carry 123 tons; or those pillars, of 31 ft. area, should carry 405 tons; and a stone of which the cohesive,—not the crushing,—power is 8,340 cwt., ought not to crash with a weight of 2,640 cwt.

In some experiments made by Messrs. Poole, also, on Ancaster stone, the crushing weight for these columns would be 391 tons, 12 cwt. 16 lb.

In some made by Mr. Lindley, the owner of the Mansfield Quarries, the crushing weight of Ancaster stone is given as 18,330 cwt. per inch, or about seven times the weight on each of these pillars, viz., 415 tons.

J. S. FOWER.

WATERING STREETS.

Yours correspondent who inquires a better way of watering streets than by horse and cart, such as hose and jet, &c., will find the information he requires in some recent numbers of the *Gardener's Chronicle*. There stated that the Local Board of Health of Reading has used the hose and wheel apparatus for many years, and is quite satisfied with its working. Those in use there are larger than those used in Paris, but are similar in other respects. A somewhat similar plan was followed in Oxford fourteen or fifteen years ago. It is very cheap; and the simplest form is gas-piping in 12-ft. lengths, put upon small cast-iron wheels, and enticed by india-rubber hose. Messrs. C. Hart & Sons, of 13, Gun-street, Reading, would give any further information.

B.

DESTRUCTION OF A MASTERPIECE OF ART.

Most of our readers will remember the richly-mounted and jewelled human skull, taken from the summer palace of the Emperor of China, and exhibited, under the department of Goldsmith's Work and Jewellery, in the Chinese Court of the Great Exhibition of 1852. It was then in the possession of Mr. P. M. Tait, and the price put upon it was one thousand guineas. It stood upon a triangular stand of pure gold, resting on three roughly-shaped heads of solid gold. The cover also of pure gold, and richly ornamented with minute patterns in low relief and studded with small precious stones. Good judges have spoken of it as the most remarkable specimen of Oriental goldsmith's work ever seen. This extraordinary piece of work has now been melted down for the mere value of the metal, and thus one of the most precious relics of Chinese art and history is irretrievably lost. Nothing remains but the upper part of the naked skull (which has been supposed to be that of Confucius), and which was left unaltered for at the house of a Jewish gold-dealer in Houndsditch.

THE KENSINGTON ROAD.

Sir,—“Quendam,” in his communication to you of last week, says that he has been told that the Kensington Park, in length 100 yards, by a width of 25 yards. He is wrong in the last measure; it should be feet, not yards. It is only 25 feet in width. The average width is very much less: 7 1/2 ft. would cause the road, just erected, in front of the Exhibition-road, and that at Queen's Gate, together with the three gates which have to be removed. The erection at Queen's Gate cost the builder on the Harrington and Abchurch lanes nearly 3,000. The line proposed, however, passes in front of the trees which might be preserved according to “Quendam's” idea, by putting the road further within them. It would amount to everything that was required, to give a good approach to the Hall of Science.

A mistake is made by parties who propose that the statue of the Prince Consort, in the monument, should be turned with its face to the park, in order that it might be towards the city. The statue, however, has always been facing the city. The first glass pillar stood far away towards Hyde Park-corner; and the statue, if placed in the position now proposed, would front towards what has always been recent London, and have its back to the real valuable creation of the recent Prince Consort, the splendid Museum of Art and Science, the Hall of Science, and the other buildings devoted to a national purpose, that will undoubtedly in a few years be erected there.

C. J. R.

* Readers will find it figured in Mr. Waring's “Masterpieces of Industrial Art,” vol. iii., p. 201.

PIRATING A ROTHERHAM FIRM'S DESIGN.

A CASE of some importance has come before the borough justices at Wakefield. Mr. Samuel Nichol, iron founder, Vignora-street, Wakefield, was charged with infringing a patent, original design, and patent design for an iron-door, a property of Messrs. Hatterley Brothers & Co., iron-founders, Queen's Foundry, Swinton, near Rotherham. An agent to the prosecutor gave evidence as to the patent design of the door, with an iron-door, identical with the prosecutor's in form. In his opinion the door had been made to the prosecutor's design. The prosecutor's iron door, however, did not appear upon the defendant's door. The defendant's son was then called, and he said that when they got the summer-house for an iron-door, all their models, which corresponded with those belonging to the prosecutor. Other evidence having been given, the Bench found the defendant guilty, and ordered him to pay the costs, which amounted to 31. 10s. Mr. Walsworth said he had received instructions to prosecute all offenders.

"AN ARCHITECT'S BILL."

LINCOLNSHIRE AND NOTTINGHAMSHIRE UNION SCHOOLS.

Sir,—Neither Mr. Peck nor his solicitors have minded matters by publishing an explanation of this bill. The main facts, as described in your Journal, remain uncontradicted; but as Messrs. Mosson & Co. have once particularly, it enables even a country architect to criticise it. The first item is—Commission on 15,500*l.*, being estimate of expenditure, 666*l.* 10*s.* There are only two errors in the bill, viz., the estimate of expenditure on carrying out the works amounted to 15,500*l.*, and upon this actual sum an assumed estimate of the architect's fee of 25*l.* is made payable; and as the works were not completed out, Mr. Peck neither superintended the works nor made out any builders' accounts, and therefore, by the bill, he is to be paid as a British Architect, and the valuable practice of architect in Lincoln and even in the country, he is to be entitled to charge 15,500*l.* at a rate of 1*l.* per 100*l.* of the sum of 666*l.* 10*s.*—a sum of 105*l.* 10*s.* 6*d.*

A BUREAU.

*. The correspondence must end here.—Ed.

CURIOUS COINCIDENCES FOR OBSERVATION.

Sir,—When I ventured to point out to the Builder the expediency of making simultaneous observations upon the physical changes in a systematic form, I anticipated a record of magisterial and electrical effects, or the dramatic manifestations from different expert scientific observers, so far as related to mundane interests in the various parts of the world, up to the present time, a relatively local point of view—that is to say, in this country, the climate, or weather, during the past three months has been so peculiar and favourable to the people are interested in the climate observe the indications of the very small quantity of rain which has fallen to date, and for which no provision could be made by man to supply artificially.

Now, as I venture to anticipate that the compensation for the deficiency of rain will be, perhaps, suitably made up, we may expect a kind of tropical supply of water is an inconveniently short space of time, so as to overtax the human outside and inside the drains and sewers. The storm outfalls ought to be looked after at once. The sudden change will be sure to be attended with magnificent electrical phenomena, and increase its effects upon various objects; lightning conductors will be found quite the right thing just now as a salutary provision, if properly conducted into water.

With the exception of the physical connection which took place on the 10th of March last, at Natal, South Africa, very few records of electrical and magnetic storms have been published.

It takes time to accumulate facts before the results reach the seer, and then usually in a form to which we are accustomed and at once identify by a popular name.

I still urge the critical examination of the magnetic indications, with the ultimate view to trace the influence of the magnetism of the place upon the inclination of the axis of the earth to the plane of its orbit, and the consequent changes in our climate during ages, and the simultaneous development by selection of various organised beings, adapted to such period, and fully identified by geology.

ARTHUR GLEAZIE.

ELECTRICITY IN THE DRAWING-ROOM.

A FANTASY story is told in a London journal, to the effect that the Empress of the French (it would seem to be) had received an electric shock on going to a mantlepiece before which lay a bear-skin on the floor; and that when the Empress did so, "a fine jet of bluish fire was seen to pass from the marble to his clothes." The story, we confess, looks rather apocryphal in the way it is told; but it reminds us of a fact in some of our electric experiments. Sir C. Wheatstone has ascertained that the mere shuffling of the feet along a carpet will charge the human body by means of a delicate electrometer which he used; nay, that the electric charge resulting from a single step of a foot is thus recognizable. And this gives some countenance to the strange story from America, that not only do people thus charge themselves electrically, for private amusement, but that they can set fire to gas with the tips of the fingers when so charged. In America, at all events, it is

well known that electricity occasionally manifests itself far more strongly than with us, and this has been attributed to the moisture of our climate on the one hand, and the dryness of the American on the other. Perhaps the continental extent of the ground in America, has something also to do with the state of electricity there; and, it may be, with the gradual and peculiar change in the physical characteristics of the people, as originally immigrants mainly from this country.

GRANTHAM TOWN HALL.

THE new building consists of a porch, spacious entrance-hall, 30 ft. by 19 ft. 6 in.; on the left hand of which is a subscription news-room, 30 ft. by 19 ft. 6 in., with a W.C. and lavatory adjoining; and on the right hand is the borough surveyor's office and munition-room, behind which is the town hall kitchen. Immediately behind the entrance-hall and staircase is placed the sessions hall, which is 50 ft. by 30 ft. and 26 ft. high. This hall is fitted up with ornamental pierced panelled work, having a raised aisle or platform at one end for the magistrates, the centre of which is occupied with a canopy-headed seat for the mayor. Behind this platform is the private entrance for the magistrates, and a private retiring-room, W.C., and lavatory, and also a petty jury retiring-room; the latter is approached from a separate entrance almost immediately from the jury-box. The arrangements for the grand jury, clerk of the peace, the pleaders, witnesses, prisoners, and the public in this hall, appear to have given great satisfaction. On the right hand the main building, and abutting against it, is placed the borough police station, which consists of the superintendent's residence and four police cells, fitted up with every convenience, and warmed by means of hot water.

The residence of the superintendent, in whose case the building has been erected, has direct communication with the town hall porch.

The prison is placed immediately behind the sessions-hall, and consists of twenty-four cells eighteen of which are for males, and the remainder for females. The governor's residence is placed at one end of the prison.

The upper floor of the town hall is approached from the entrance-hall by a spacious staircase, 6 ft. 6 in. wide, the height of which is divided into three flights, having spacious landings between each. From the second landing, right and left, are placed the grand jury-room and witness-in-waiting-room. From the former a door leads directly into the grand jury gallery of the sessions-hall. These rooms are also intended to be used as retiring-rooms to the large assembly-room when required.

The assembly-room occupies the entire front of the main building, is 60 ft. by 30 ft., and 21 ft. high, and is capable of dining with comfort about 200 persons. The ceiling of this room is divided into nine panels, three in length and three in width, the beams dividing them being left perfectly plain, thus giving apparent strength to the constructive features of the ceiling. Ornamental cornices are fixed round the inside of each panel, that portion of it on the ceiling being pierced through for ventilation. The decorations consist of carved plaster work in the Renaissance style of architecture.

The front buildings next St. Peter's-hill are built with Messrs. Platt's patent dry-pressed red bricks, from Oldham, in Lancashire, with Ancaster stone dressings, except the columns of the front entrance porch, which are of red Mansel sandstone. The dressings arches to the windows, and the archways of the porch, have moulded panels inlaid with Lizard serpentine polished marble. The entrance-hall floor is laid with Maw & Co's encaustic tiles.

The cost of the prison and governor's residence was nearly 3,000*l.*; and when we consider that there are in addition thereto separate cells for the chief warder, superintendent of police, and four cottages for policemen, making no less than seven separate houses, likewise police-station, offices for fire-brigade, and sessions hall, it will be seen that from a little over 8,000*l.* a very small sum could have remained for the town-hall proper.

Mr. W. W. Waring, of Lincoln, was the architect, and Mr. Wansaby, of Grantham, the contractor.

The India Museum.—In future this museum will be opened on Saturdays until eight o'clock p.m.

CHURCH-BUILDING NEWS.

Tongue.—St. Michael's Church, Tongue, has been renovated in its internal fittings and arrangements, from the designs and under the superintendence of Mr. H. Cockbain, architect, Middleton, near Manchester. The old high-backed pews have been removed, and open benches substituted, with reclining seats and backs, and the walls of the nave have been wainscoted with portions of the old woodwork. The arrangement of the chancel and choir has been materially altered. A portion of the nave floor in front of the chancel has been raised two steps, and will accommodate the organ and choir. Above the floor, the floor of the chancel has been raised three steps. The walls and ceiling of the chancel have been painted and decorated with bands, powdering, diaper, and other designs in colours. These decorations have been executed gratuitously by Mr. John Deane. The wainscot on the east wall of the chancel, like the other woodwork, of pichin. Other alterations and improvements have been effected. The contractors were Messrs. Welling, Brothers, of Middleton. The ironwork was by Messrs. Thomson & Co., of Birmingham and Manchester.

Thorndon.—The Church of Thorndon, near Ely, is about to be restored. The most considerable improvement, in the plan, is the removal of the old carved pulpit and reading-desk near the chancel, rebussing the nave, the removal of the gallery, and throwing open the west window, now for the most part blocked up by it. By lengthening the benches, narrowing the passage, and seating that part of the nave, the gallery, and the chancel, the seating will be increased and the interior of the church improved. The walls are continued from end to end without a break, the chancel being only distinguished from the rest of the church by the steps which lead to it, and is the roof by a projecting rib springing from carved corbels. Mr. Phipson is the architect, and Messrs. G. Grimwood, of Weybridge, the contractor. The contract is for 377*l.*

Cheville.—The chancel of the parish church of Cavendish, which is interesting as containing some curious inscriptions on mural monuments, and also Chantry's monument to the late Countess of St. Vincent, has been restored at the expense of the patron, the Rev. Canon Hon. E. S. Cavendish. The work has been carried out by Mr. S. Mear, of Longton, builder. Everything has been done without the aid of an architect.

Oundle.—Balwick Church, Northamptonshire, is undergoing a necessary restoration. The edifice has been placed in the hands of Messrs. (Sisters & Co.) of London, architects, and Messrs. Halliday & Care, of Greattham, Rutland, contractors. The provisions made for carrying out the restoration have been agreed upon, Mr. T. Tyron, the lord of the manor, offering to heat the church and erect the family seats; the other portion of the expense to be borne by the incumbent, and a rate leviable on the parish.

Great Waltham.—The foundation-stone of a new church has been laid at North-end, near Great Waltham, by Mrs. Tuffell, of Langley's Park. The district assigned to it is the northern portion of the large and scattered parish of Great Waltham. An eligible site of four acres has been purchased, and a parsonage-house, which is also to be erected, has been given by Mr. J. J. Tuffell, who has likewise contributed towards the building of the fabric and the residence. The new church, which is to be dedicated to St. John the Evangelist, will be built in accordance with plans which have been prepared by Mr. Chancelor, of London. It will consist of a nave of about 60 ft. long by 22 ft., a south aisle the same length and about 10 ft. wide, and a chancel with octagonal end 27 ft. 6 in. long by 19 ft. wide, providing accommodation in all for about 250 persons. At the east end of the aisle there will be a tower, the ground floor of which will serve as vestry, and the upper story as the site will be protected by a porch. The walls of the building throughout will be faced with red bricks, inside and outside, relieved by bands of pressed bricks and stones. The windows in every part of the church will have moulded brick jacks and arches with plate tracery. The arcade separating the aisle from the nave will have stone columns with moulded brick arches. The roofs of the nave and aisle will be open timbered. The tower will be 50 ft. in height from nave floor to eave of spire, and the spire will be 20 ft. high. The porch will be of oak,

open timbered with arched sides. The church will be fitted internally with open benches, and the gangways will be paved with tiles. It is proposed to heat the church with hot water. The cost of the building will amount to something like 2,550*l*.

Southborough.—The foundation-stone of a new church has been laid on the New Building Ground, Southborough. The funds at present will only admit of a portion of the church being built. There will be a chancel and two transepts, and the church will be built in the early Gothic style, of local stone, with Bath stone dressings. It will be lined internally with red bricks, and will have an open-timbered roof covered with tiles. The church is to hold about 200 people, and is to be completed at a cost of about 1,500*l*., by Messrs. Willcocks & Oakley, the architect being Mr. Theodore H. Green.

Preston (Lancashire).—Emmanuel Church, Preston, has been consecrated by the Bishop of Manchester. It is built of brick, with strings and bands of coloured and moulded bricks and stone dressings. The style of architecture is Geometrical Gothic. The plan is of a nave, and the ground floor accommodates 633 adults, 150 in the west gallery, and 92 in each transept gallery. There are four entrances to the church, viz., the lower doorway, the double doorways at the west end, and one to each transept which answers for the galleries. The entrances are so arranged by double doors that the church is of shape of draught is varied. The west entrance is approached by a porch projecting about 7 ft., which is surmounted by an ornamental carved stone cornice, and a neat balustrade with trefoil and quatrefoil perforations having large carved leaves at the angles. Over the archway in front of the porch is a gable, with a large window left for carrying some appropriate subject. The organ-chamber and vestry are on the south side, on the north side of the chancel. The tower of the church is at the south-west corner: it is 12 ft. square inside. The nave is lighted by two and three light windows on the north and south sides, filled with plate tracery. The transepts are lighted on the west by three light windows, and at the ends with three single lights, having a large one over. The chancel has a five-light, and the west end of the nave a four-light. The roofs throughout are open timber of pitch pine, and are boarded diagonally. The extreme length from east to west is 125 ft.; breadth over transepts, 86 ft.; breadth of nave, 24 ft. 6 in.; organ-chamber, 20 ft.; transepts, 26 ft. 6 in.; length of nave including vestibule, 86 ft. 6 in.; chancel, 27 ft.; organ-chamber, 13 ft. by 11 ft.; height of nave from floor to ridge, 45 ft.; height of tower to top of pinnacles, 100 ft. The architects of the edifice, its furniture, and fittings, were Messrs. Myers, Vevers, & Myers, of Preston. Mr. F. Powell was clerk of works. Mr. John Bamber, builder. The gasfittings and lecter were provided by Mr. John Whitehead; heating apparatus by Mr. Seward; and the decorations by Messrs. Park & Co., all of this town.

Keele, Staffordshire.—The new Church of St. John the Baptist, built at the sole cost of Mr. Ralph Sneyd, of Keele Hall, the patron of the living and owner of the parish, has been opened for divine service. The church has been erected from the designs of Mr. T. Lewis, of Newcastle, architect, under whose superintendence the works have been carried out to completion. The rebuilding was commenced in the spring of 1868. The new edifice will seat 200 persons, and hold 100 children, and consists of a chancel, 32 ft. by 18 ft., with a vestry on the north side thereof; chancel aisle, each 12 ft. 6 in. by 12 ft. 6 in.; nave, 60 ft. by 21 ft.; north and south aisles, each 47 ft. by 10 ft.; and a tower, 16 ft. square at the west end of the south aisle, with a spire, the total height of which is 128 ft. from the ground level to the top of the metal flint. The principal entrances are by porches at the west end and on the south side. The building is of the Decorated period of Gothic architecture. The external walls are 2 ft. 3 in. thick, built with rock-faced native stone (of a pale red colour), and Hollington stone dressings (of a pale red colour), and the windows are of the Westons stone, part of which formed the outside walling of the old church, the piers, arches, and general dressings being of Hollington stone. The nave has an arching of four arches on each side, with octagonal piers supporting a clear-story, and with a moulded arch between the nave and chancel, with smaller arches to the chancel aisle. In the course of the excavations for the foundations, two recumbent figures in alabaster were found. These were recognised as having

formed the effigies from an altar tomb, which had been in the former church as a monument of the Sneyd family. These and the tomb have been restored, and placed in a recess prepared for them on the north side of the chancel. Against the east wall of the chancel is an arched recess formed of Hollington stone, with columns of griati marble and panels of Minton's mosaic tiles; the floor of the chancel and the platform of the altar are laid with Minton's tiles. The font is of Hollington stone, the upper part having carved panels and appropriate inscription, and supported by an octagonal base with griati marble columns. The roofs are of high pitch, and covered with green Westonslale slate, those of the nave and aisles being of red slate, stained, and the plaster between rising at tinted blue. The chancel and chancel aisle roofs are paneled in oak, and the main ribs of the former are supported by carved oak figures supporting shields. All the seats, pulpit, desk, communion-table, and other fittings are in oak. All the windows are glazed with cathedral glass, having a narrow border of clear glass round the stained glass. The east window of the chancel is only common glass at present, but is intended shortly to be replaced with stained glass. The church is warmed by Haden & Son, of Trowbridge. The six bells, which were formerly in the old tower, have been tanned, refitted, and reborn in the new tower, by Messrs. Mears & Sons, of London, and placed under way at the opening services. One of these bells has the inscription, "God save the King, 1647," cast upon it.

DISSENSING CHURCH BUILDINGS.

Derby.—The new Congregational chapel, Derwent-street, has been opened. It is planned to seat 350 persons, and is of sufficient height to admit of the addition of side galleries, for the insertion of which and the extension of the end gallery provision is made. By these means the accommodation may be increased to 600 persons. The plan of the chapel is a rectangle, the pulpit and beneath is a vestry. The site provides ample room for commodious schools, which it is proposed to erect at a future time. The style of architecture adopted is Gothic of the fourteenth century. The front next Derwent-street has a four-light triforium window in the gable, and an arched doorway in the front. The arch being moulded and supported on stone shafts with carved capitals. Staircases flank the front gable on either side, that on the north side being grouped with an octagonal spirelet, 45 ft. high. The work has been executed by Mr. Stoddard, of Derby, the contract price being 1,250*l*. Mr. Tait of Leicester is the architect. The Green-hill Wesleyan Chapel has been re-opened after undergoing extensive alterations. The ceiling has been raised and thrown into moulded panels; the windows, of which there are six on each side, are new; the square windows in the gallery are superseded by circular headed ones. New vestries have been added, the roof has been re-slatted, and the old front has been replaced by an elevation in the Italian style. Mr. John Gadsby has carried out the work. The late Mr. Woolhouse was the contractor for the plumbing. The decorations were by Mr. Baiford. The alterations and improvements have been made under the superintendence of Messrs. Giles & Broadbent, who are acting as architects. The improvements will be something like 1,000*l*.

Cambridge.—The memorial stone of a new Wesleyan chapel has been laid in Hills-road, Cambridge. The chapel and minister's house are to cost 4,000*l*., and the funds still needed to complete the work are 2,000*l*. The church is to be built of red brick. The site is Early Gothic. The chapel is set back some 20 yards from the road. In the basement there are arranged a schoolroom, 42 ft. by 33 ft., three class-rooms, of good size, kitchen and heating apparatus room. On the ground-floor plan there will be inner and outer lobbies to the chapel. The fittings on the ground-floor will be 340 seats; those in the gallery will accommodate 200 adults and 100 children, and the organ-gallery 10 adults. The gallery will be approached from both sides of the principal entrance by means of a staircase. At the back of the chapel, over the kitchen, will be a minister's vestry. On the left-hand of the principal entrance will rise an octagonal bell-turret, supported at the top by an open octagonal gallery, the arched of which are somewhat obliterated with carving and gurgles. The front gable is pierced by a triplet

window, filled in with Geometrical tracery, having four lights in the centre and two at the sides. The whole of the windows in the chapel will be glazed with cathedral glass in quarry lights. The principal entrance doorway is in the centre of the front. At the sides of the entrance doorway are double-light windows for the inner lobbies. There are main entrances at the front and side to the staircases wings of the gallery. The building will be constructed of white bricks and Bath stone dressings. The amount of the contract is 2,938*l*. The architects are Messrs. Hill & Swann, of Leeds and Sheffield; the builder and contractor, Mr. Thoday, of Cambridge; and the clerk of the works, Mr. W. Cooper.

SCHOOL-BUILDING NEWS.

Abingdon.—The new Grammar School here has been opened. The site is in the Albert Park. The new buildings have been erected by Mr. Charles Clavering, of Banbury, the contractor. On the ground floor, so called, which, however, in this case is elevated some 9 ft. above the ground, in order to give an airy basement-story underneath, there are a schoolroom (66 ft. by 30 ft.), having an open-timbered roof; boys' library, class-rooms, dining-hall, and assistant master's sitting-room. The first and second floors are devoted to dormitories for boys, bath-room, masters' bedrooms, matron's rooms, and other offices. Underneath the schoolroom is a covered playground for the use of the boys in wet weather, the side walls being arched, the floors laid with coloured tiles, and entered from the outside. The infirmaries or sick rooms are detached from the main portion of the building, being approached by a separate staircase, which can only be entered from one of the matron's rooms. The dining-hall is fitted up with dinner-lift oak tables and benches. The master's house, is of ample dimensions, some of the rooms being much beyond the usual size, the drawing-room having an original fire, and the work of the park. Externally the building is of a simple character, the local material of red brick and tile being the chief material employed, relieved by bands of Bath stone, the windows also being of that material. The grounds surrounding the building are being levelled and laid out as playground, recreation or pleasure grounds, and gardens for the headmaster. Boundary-walls, gates, and fences are being erected in accordance with the design of the building by the trustees. The designs for the building were selected in competition, and were prepared by Mr. Edwin Dolly, of Abingdon, who has also superintended the works. Mr. F. Bryan is the clerk of the works. The total cost of the building, fittings, architect's commission, clerk of works' salary, and all other expenses, will be about 7,000*l*. The stone carving has all been executed by Mr. Samuel Gratton, of Oxford.

Devonport.—The new schools at St. Stephen's, Devonport, have been opened. The site has been given by Sir Edward St. Aulay, the lord of the manor, and the architect was Mr. J. P. St. Aulay, London. The builder was Mr. Elliott, of Plymouth. The schools will accommodate over five hundred children. The front does not come out level with the houses, but retreats several yards, and is enclosed with rails. The cost of the new schools is 4,000*l*.

Oldham.—St. Peter's Branch Schools, Ashton-road, have been opened as a place for the celebration of divine service on Sunday, and "as an easement to St. Peter's Church." The building is in the Gothic style, with open-timbered roof and two light windows with pointed heads. It has a spirelet, and a porch to the west end of the gable. There is a porch to the principal entrance, and a small chancel, with vestry attached, having a cellar underneath, containing boiler for hot water, &c. The building will seat about 280 persons. It is heated by hot air, and lighted by ornamental wall brackets. The total cost, including fittings and boundary walls, will be about 800*l*. The architect is Mr. Wm. Loof, of Oldham, is the architect; and Mr. Wm. Loof, of Greenacres-hill, the contractor for the whole of the works.

Stamford.—Roman Catholic schools have been erected here. The new building is of stone, and in a style of architecture corresponding with that of the Church of St. George, of Geometrical Pointed. It is 46 ft. long by 30 ft. wide, and 25 ft. high inside. The room is entered by a porch to the front, and opposite to that of the church, being lighted by a characteristic pointed

window in its gable. The floor is laid with tiles. The windows are coupled, pointed-headed, with an inner arch stopping in angled played jambs; the lower portion of the woodwork being joined, and that above the stone transoms levels hinged to fall inwards. A tracery, cusped, pointed, and wheeled window fills the gables. The roof is composed of framed principals and curved pieces, carrying chamfered purlins, closer together than generally seen; and these in their turn carry the boarding which is exposed. Messrs. Goldie & Child, of London, were the architects, under whose superintendence and from whose designs the work was carried out. Messrs. Halliday & Cave, of Greenwich, were the contractors, whose foreman, Mr. Walters, had charge of the work.

Thorpe-le-Soken.—The memorial stone of a new parochial school has been laid here. The site of the proposed school, about three-quarters of an acre, is in the centre of the village, near to the church, and is the gift of the vicar. Mr. James Rolph, of Thorpe Park, has offered to be at the whole expense of erecting the schools, the estimated cost of which is between 7000. and 8000. The architect is Mr. Wray, of London, and the work has been undertaken by Messrs. Gifford & Wellham, of Thorpe, builders.

VILLA AND HOTEL BUILDING.

Carshalton.—The laying of a memorial stone in the walls of the first villa erected by Mr. E. H. Rabbitts, on his Strawberry Farm Estate, has recently taken place. Strawberry Farm lies to the north of the new line of railway, the railway embankment bounding the estate on one side, from the bridge over North-street to a second bridge over the road and the river close to the residence of Mr. G. Brodrick, which forms part of the property. The other sides of the estate present frontages to three roads, one of which skirts Hackbridge Park. The whole is well timbered. The gravelly soil, the close proximity to the railway station, the rural and proverbially healthy nature of the locality, and the attraction of the Wandse, combine to recommend the spot as a site desirable for country villa residences. It is arranged to have but one road through the estate, which, with drains, are being formed and made. First-class houses are to be erected, with from a half to an acre of ground each. The ground is to be let or sold, and houses will be built to the design of those agreeing to take them after completion. The architect is Mr. J. D. Hayton.

Southampton.—An addition to the hotel accommodation at this busy port has been inaugurated by the opening of a building in the Italian style of architecture, which forms a façade to the terraces of the South-Western railway, and immediately from the docks from which the mail steamers start. This hotel has more than 100 bedrooms, with reception-rooms, bath-rooms, &c. It is started upon the somewhat indefinite but very requisite principle of a "fixed and moderate" tariff. A feature is a steam laundry of capacity sufficient to start any number of the longest voyagers on their inland journey with clean wardrobes in a few hours.

STAINED GLASS.

Christ Church, North Shetlands.—The great west window of the tower in this church has just been filled with stained glass, to the memory of the late Rev. Christopher Reed, M.A., thirty-eight years vicar of Tyne-mouth. The window is circular, 10 ft. in diameter, and is fixed in iron-work with copper fittings. The subject is "Our Lord's Commission to the Apostles," which is surrounded by a border, the figures of our Lord, St. Peter, St. John, and St. James being prominent in the foreground, and life size. The work is painted with due regard to the great height in which it is placed. The cost has been raised by public subscriptions, amounting to above 1100., from the parishioners of Tyne-mouth; and the work was designed and executed by Mr. Bagley, of Newcastle. The same artist has received a commission to paint two other windows for the same church, which will then be entirely filled with stained glass.

Chickster Cathedral.—Another memorial window, of stained glass, has been completed, and placed in the north aisle of this cathedral, immediately adjoining the north transept entrance. It was executed by Messrs. Clayton & Bell. The window is in memory of George Croke Bowden, D.C.L., Precentor of the Cathedral.

The centre figure represents King David, the "sweet singer of Israel."

St. Saviour's, Lower Walmer, &c.—The east window of this church has been fitted up with stained glass, in memory of the late Mrs. Barrow. The window is in three lights, and the subjects illustrated are, in the centre, the Crucifixion, and on the sides the Bearing of the Cross and the Descent from the Cross. The tracery is filled with emblems of the Evangelists, and mounted by our Lord in majesty. Mr. W. M. Pepper, of London, fitted up the window. It is also at present engaged in restoring the stone-work and painted glass of the east window of St. Mary's, Seymour-street, and preparing nine large windows for the cathedral at Sierra Leone.

All Saints, Clifton.—A stained-glass window has been placed in the chancel of this church. It is of large size, and was designed by Powell, and executed by John Hardman, of Birmingham. It is composed of five lancet-headed compartments, and three circles above. The window represents a crowd of saints—some in heaven, and others on the earth. The cost of the window was 5000. A new organ has been provided for the church by Mr. Hill, of London, at a cost of 1,1000.

St. Catherine's, Gloucester.—At the time of the building of this church, says a Gloucester paper, five windows were placed in the chancel. They were the gift of a sister of Mr. Monk, and represented our Lord and the Evangelists. Soon afterwards a connected design for the whole of the windows was prepared by Messrs. Clayton & Bell, who suggested that in the north transept the figures should be those of Elijah, David, and Moses; in the south, those of SS. Peter, John Baptist, and Paul; in the windows on the northern side of the nave, Daniel, Ezekiel, Jeremiah, and Isaiah, prophets; in those of the south side, Stephen, Lawrence, George, Alban, Mary, and Catherine, saints of the early Christian church; and in the window at the west end the patriarchs Abraham, Isaac, Joseph, and Jacob. The windows in the south transept have just been erected by Messrs. Clayton & Bell; they are the gift of Mr. Charles Walker. The pierced tracery of the Catherine window has been filled with ornamental glass, the central light containing the sacred monogram. There are figures of SS. Peter, John, and Paul. In the triforium each lancet is represented as angel bearing the martyr's cross and palm, and under the figures are representations of our Lord's charge to Peter, "Feed my sheep;" the martyrdom of St. John in prison, and Paul struck with blindness when on his way to Damascus.

Church of Headless Cross, Redditch.—Two stained glass windows, by Mr. Freedy, of London, have been inserted in this church, to the memory of the late Baroness Windsor. In the first window there is a representation of the Holy Child, His Mother, St. Joseph, and the wondering shepherds, who came to the stable to see Him; and underneath is the text, "The Word was made flesh, and dwelt among us." On the second light is represented the Virgin Mother holding the Child. Above their heads is the Star of Bethlehem, and kneeling in adoration are the Magi, offering their "sacred gifts of mystic meaning," while below is the text, "The Kings of the East and of the Isles shall bring presents." In the first light of the second window is the presentation of Christ in the Temple. On the next light is the baptism of our Lord in the Jordan; above is the holy dove, and below the text, "This is my beloved Son, in whom I am well pleased." Each of the subjects is surrounded by canopy ornaments with golden crockets and finials, and surrounded by coloured borders. These windows are at the west end of the church.

Doncaster Church.—The Standish window, which is to be placed in the north transept of the parish church, will be from the atelier of Messrs. A. & W. H. O'Connor, London. The whole of the window is to be in the style of the upper portion of the six lights of the apse window will appear, depicted by the subject of the Transfiguration, shown in a mass of soft, transparent light. The figures will be of heroic size, and the whole subject will be surrounded by a great aureole of angelic spirits in mystic attendance. Beneath this, and also in the six lights, subject represented will be that of the father and his twelve apostles, the disciples being grouped around—the spiritual life into striking contrast, with the glory depicted above, the helplessness of humanity, struggling with pain and infirmity. The coloring of this part of the window will be toned down to a

sombre light in order to contrast the more effectively with the radiance above. The motif is the same as Raffaele's, but Messrs. O'Connor have designed original pictures, suited to the requirements of painted or stained glass. The cost of the window is to be 5000.

Wubeck Church.—A stained-glass memorial window to the late Mr. Wm. Stevens has just been placed in the north side of the chancel of this church. It is the workmanship of Messrs. Clayton & Bell, of London. The window is a two-light Gothic one, and the subject in one compartment is the "Agony in the Garden," and in the other "The Ascension." A quatrefoil above contains an angel holding a label inscribed "Watch and pray."

St. Paul and St. Peter's, Olney, Bucks.—A stained glass memorial window is to be placed in the east end of this church. The window measures 37 ft. high, by 15 ft. wide, and contains, in the three centre compartments, the Ascension of our Lord into Glory, surrounded by the figures of the Apostles, designed life size; underneath the same, the subject of the Last Supper, forming a pedestal for the group above. In the two side openings are the subjects of the Annunciation of the Virgin Mary, the Nativity, Crucifixion, and Resurrection of our Lord, surrounded by rich canopies in proper keeping with the figures. In the tracery are the emblems of St. Paul and St. Peter, the patron saints, also the Four Evangelists, the Dove as an emblem of the Holy Ghost, Angels with various kinds of music, incense, &c., and others bearing scrolls. The window is now fixed. Messrs. Holland & Son, of Warwick, are the artists.

Books Received.

The Metropolitan Board of Works: Report on the Economy of Road-maintenance and Horse-draught through Steam Road-rolling, with special Reference to the Metropolis. By FREDERICK A. MORT, C.E., &c. Printers, Judd & Glass, Doctors Commons. 1870.

THIS Report is greatly in favour of the use of steam rollers of a certain weight. Their reputation of too great weight, Mr. Mort explains, was gained by 30-ton and 35-ton rollers. With the use of steam, he is of opinion, all objections to road-rolling fall away. There is no interruption to the traffic; the roller is easily managed, and ascends inclines; the road rapidly consolidates; no horses throw about loose metalting. The greater weight of the steam roller is its chief advantage over the horse roller. Too heavy rollers do injure the sulways, &c.; but it is impossible to have a roller as heavy as the heaviest traffic. The frightening of horses can be prevented by working at night, or by blocking up the thoroughfare for a short distance while repairing the road; but an ingenious and simple way of preventing horses from being frightened by the steam-roller is to harness an old horse in front. The work of the steam-roller is much better than that of the horse-roller, in quality as well as quantity; and in economy the steam roller is preferable. The saving in metalting can be estimated as at least 50 per cent. per annum, as is the general cost of maintenance by steam-rolling by comparison with horse-rolling.

In short, the steam-roller, in the reporter's opinion, saves expense and time, and does better work than the horse roller. The work diminishes the horse draught, and saves wear and tear in horse flesh, vehicles, and harness, as well as in the time and energy of men and animals.

The Report enters fully into the subject, and is very valuable.

VARIORUM.

"The Annual of Scientific Discovery; or, Year-Book of Facts in Science and Art for 1870. Edited by John Trowbridge, F.R.S., aided by S. Kneeland, M.D., and W. N. Nichols, Esq.; Gould & Lincoln. London: Trübner & Co." This useful American Year-book of Science and Art sustains the favourable opinion of it which we have repeatedly expressed. The present volume gives a vivid portrait of Professor Peirce, and the usual notes of the editor on the progress of Science for the year 1869.—"Essential Metallurgical Works, Iron, Copper, and Gold. By Herbert Barr, late Director of the Estates and Ironworks of Vicksburg. London: Edinham Wilson. 1870." In this small volume, a plain and brief account is given of

Russian metallurgical works, at the conclusion of which the author says,—

"I think the facts I have given will show that the territory which Russia possesses, especially in metallurgical enterprise, is enormous; that that country is as yet undeveloped in an infinitesimal proportion only of its real power; and that it is only awaiting energy and enterprise to make its production ascend the world."

—Handbook of English Coins. By F. Llewellyn Jewitt. London: Tegg. A concise description is given in this little volume of the various denominations of English coin from the Norman Conquest to the present reign. It is illustrated by metal-coloured plates of good many of the coins described. —Hogg's "Secret Code for Letters or Telegrams." Hogg & Co., Fleet-street. To prevent the easy decipherment of secret correspondence, based on the interchange of alphabetical letters, this card has been published, with instructions for the introduction of key-words, which will easily puzzle the would-be decipherers, and render all their attempts, on the old principles, useless, unless they can guess the key word, which may be any single word whatever, so as it be known to the correspondents beforehand.

Miscellaneous.

The Public Baths and Washhouses, King-street, Camden Town.—The annual report of the commissioners for these baths to the Vestry of St. Pancras has been printed. It states that the progress made the first year the institution was opened has been fully maintained during the past year. The total receipts for the year amounted to £5,522, 11s. 6d., against £2,344, 1s. 6d. for the forty-four weeks the baths were opened, 1868-9. From the opening of the establishment on the 19th May, 1868, to the 20th March, 1869, 145,735 bathers availed themselves of its advantages; and for the year ending the 19th March, 1870, 149,474 persons have enjoyed the luxury of a bath. The classification is as follows:—First class, 48,364; second class, 101,110. The number of washers in the wash-houses has gradually increased, and this portion of the establishment has been very beneficial to many poor families. In 1869 payment was made on 9,425 separate occasions, and the receipts were £181, 11s. 5d.; but for the year ending the 19th of March, 1870, payment was made on 19,020 separate occasions, the receipts being £480, 11s. 6d. The balance-sheet shows that £5,522, 11s. 6d. have been received, and £2,110, 11s. expended in working expenses and repairs.

The Building Trade in Paris.—The following petition has been laid before the Corps Législatif:—

"Gentlemen,—We, the undersigned, have the honour of calling your attention to the consequences of the suspension of public works in Paris. Numerous constructions, contracted for and commenced some years since, are exposed to a probable decay, which will lead to heavy expenses for repairs. The various bodies of craftsmen connected with our business, which in the capital and its suburbs employs more than 200,000 men, are very sorely tried. Certain heads of establishments who used to employ on an average a thousand men, can now scarcely find work for a hundred, and the blue-tincts who remain of course suffer and complain bitterly. Our stock and trade materials are deteriorating, and the standards brought in by the public administration have consequently lost a security of private enterprise. As a consequence, moreover, we cannot obtain payment of the large sums due from the city. The Parisian population, however, all, both masters and men, in a state of embarrassment cannot be continued without serious danger. We therefore pray you, gentlemen, to take prompt and energetic steps for saving us from the calamities which threaten us, since all happiness depends on you."

New Store for Castleford Co-operative Society.—The corner-stone of a new store in connection with this society has been laid at Castleford. The society was formed by about a dozen persons in 1865, when operations were commenced in a small shop. In addition to extensive shops to be used as drapery and grocery stores, there will be a secretary's office, a library, and a reading-room, and other apartments, the chief of which will be an assembly-room capable of containing 450 persons. The building has been designed by Messrs. Maxwell & Tuke, of Bury. The cost of the new store will be about £862. The land involved on an outlay of £655, 15s. The contractors for the erection of the building are Messrs. Kassell, Brothers, masons and excavators, Castleford; Messrs. Shuttleworth, Brothers, joiners, Keighley; Mr. J. Bines, plasterer, Castleford; Mr. T. Lister, painter, Castleford; Mr. Doyle, plumber, Leeds; and Mr. Pycock, Slater, Leeds.

Society for the Encouragement of the Fine Arts.—On the 2nd Dr. Westland Marston delivered a lecture to the members of this society on the "Tragic Element in the Drama and Fiction." Dr. Doran in the chair. The lecturer, premising that his address would be confined to a few hints connected with the present condition of tragic art, declared that at no previous period in the history of literature was there so much danger of tragedy being misused, and of the dramatic emotion at the present day were incompatible terms, the popular taste being in favour of perilous adventures and miraculous escapes. One cause of this was the passion for realism which seized upon the photographic appearance of life, and neglected the essential parts; another the monotony of modern society that made itself taste to feel, and reduced everything to a dead level of indifference. It was the fashion now to be ashamed of showing spirit. In some degree all art takes notice of externals, but it should not be bounded by them. At its close a short discussion ensued, in which Dr. Doran attributed much of the falling off in the tragic art to the want of appreciation on the part of actors. Dr. Doran drew a comparison between the methods employed by celebrated English and foreign actors, in order to raise their feelings to the proper pitch of tragic excitement, insisting that our actors had managed this more naturally than the French.

The British Association Committee on Sewage.—There seems to be a hitch in the working of this committee. It consisted of six members, nominated by the association; but at the suggestion of Mr. W. Hope, three professors, Williamson, Marshall, and Corfield, were nominated, as a sort of colleagues, or extra committee men; and these three, with Mr. Hope, have outvoted the other gentlemen present and voting, on a question of payment of personal expenses. The only voters in the minority, Professor Wanklyn and Dr. Paul, have accordingly written to the corporation, etc., subscribing the report, and have stated that the replies are to the effect that the very fact of a subscription to the committee implies that the personal expenses of the committee, as well as other expenses, are to be met by means of it. Mr. Hope and his nominees are not likely, therefore, after all, to be able to shoulder out the original committee, and have it all their own way as to the disposal of the fund and the resultant disposal of the question of sewage treatment and utilisation. The minority question the right of the three professors to vote at all on the committee nominated by the association.

Summer Garden Society.—The inauguration of the pleasure-grounds of this society, situated within about a quarter of a mile of the Willesden Junction Station on the North London Railway, was celebrated on Sunday. These gardens were first established in 1864, and have been managed under the title of the Summer Garden Society, and will be conducted on a principle popular on the Continent, under the management of Mr. Henry Bolleter. The admission is by season ticket only, at the price of 1s., and admitting until September next, the children of members under twelve years of age being admitted free with their parents, it being the object of the society that the gardens should become a summer resort for families. On week-days, among the other amusements provided are cricket, bowls, quoits, athletic sports, and dancing, on a large platform, with special amusements for children. On Sundays the gardens must be closed in the afternoon for promenade, with instrumental hand, which will play from four until eight in the evening. No persons but those holding season tickets will be admitted into the grounds.

Clifton, Beds.—In an outlying portion of this parish, called Clifton Fields, an infant-school has been erected, at the sole expense of the rector; and the village church has been provided with additional bells, for chiming. The original peal consisted of five bells, the tenor, or largest bell, weighing about 111 cwt.; to these ten have been added by the rector, chiefly with a view to the contemplated chiming. Messrs. Mease & Stainbank supplied the new bells. The chiming machine was manufactured and designed by Messrs. Gillett & Bland, at their steam clock factory, Croydon, Surrey. It is fixed in the same chamber (below the bells) as the clock, with which it is connected by means of a lever, which sets the machinery in motion every three hours.

A New Motive Power in Aid of Steam. How to generate steam quickly, and at the same time inexpensively, has remained one of the problems left to engineers to solve. Mr. Galway has invented an apparatus which, whilst it does not claim to supersede all steam boilers at present in use, yet claims that it can be affixed to them readily, and, once applied, save 50 per cent. in the cost of fuel, and pay for itself within one year. The apparatus is a small cylinder worthy of the consideration of those who use steam power. The invention, as we understand it, consists in the application of atmospheric air, which is first of all pumped down a pipe passing through the flue, the air being heated on its passage; the pipe is continued under the furnace, and passing through returns on the back under the fire bars; and the temperature of the air having thus become raised by the waste heat is driven into the boiler, and helps to generate steam in the chamber, the action of the piston rod assisting the process.

Royal Horticultural Society.—On Wednesday last the great show of the season at the gardens of the Royal Horticultural Society took place. The display of plants, flowers, and fruit was excellent, and may be regarded as in every respect successful. The attendance of visitors was very numerous. An important feature of the show was the exhibition of rhododendrons by Mr. Waterer, of Knaphill Nursery, under the marquee. Several thousands of trees were set in groups upon undulating land, and the masses of bloom of various tints, well arranged and divided by walks, to the spectators on the elevated spot, were very effective. In the general exhibition the orchids were a remarkable collection, and the fine foliage plants were numerous and of great merit. The azaleas were not quite so good as usual.

Oxford Architectural Society.—The members and their friends, to the number of twenty, have visited Rycoote and Thame. The remains of the mansion at Rycoote were first examined. They are but a small portion of the original mansion, which was almost a palace. It was the residence for a time of two crowned heads. An account of the leading features of the church was read by Mr. Bruton. The members then continued their journey to Thame, when the chief points of interest in the church were described, and pointed out by Mr. Payne, of Charley's Hall. The Froghedon was next visited; as also the grammar-school of Thame. The next excursion included Somerton, North Aston, Steeple Aston, Lower Heyford, Heyford Warren, and, if time permitted, Bosham. Warwick was next to be visited.

Broughton Footbridge, Manchester.—The ceremony of opening the new suspension footbridge which has been erected at the foot of Hough-lane, between Broughton and Peel Park, took place on Saturday afternoon. The centre opening is 135 ft. in length, but the entire length of the structure is 240 ft. The footway is 8 ft. wide, and the ironwork, of which there are some 20 tons, rests upon two stone piers, while the chains are attached to anchors of considerable weight on each bank of the river. The total cost of the bridge, which has been defrayed wholly out of the Broughton rates, is about £1,000. The engineers are Messrs. Cawley & Newton, and the contractors for the iron work, Messrs. W. Mabon & Co., Ardwick; and for the masonwork, Mr. E. Johnson, builder.

Hammer-smith Bridge.—The annual general meeting of this company was held at the Freemasons' Tavern. The report stated that the tolls collected from the 25th of April, 1869, to 30th of April, 1870, amounted to £1,431, making the total receipts from all quarters, including a previous balance, £7,331, while the total expenditure had been £1,124. A dividend of 2d. 2s. per share was recommended, which would absorb £3,313, 16s.; and after increasing the reserve to £2,000, would leave a balance of £41, in hand.

Royal Gallery of Illustration.—*Agnes and Bessy* my Neighbour's advertisement for the last performance on June 15th. On the following Monday a novelty, from the pen of Mr. W. S. Gilbert, entitled *Our Island Home*, will be produced. For this Mr. German Reed has composed the music.

Cause and Effect.—A telegram from Madras says,—"Cholera is assuming an epidemic form. The effluvia from the river is frightful."

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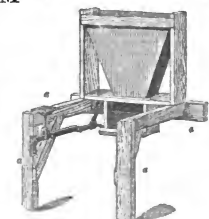
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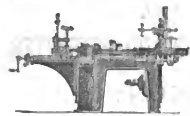
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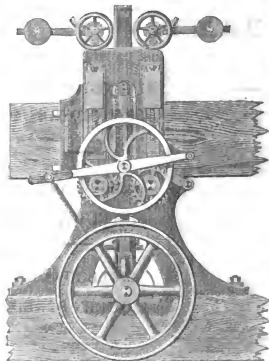
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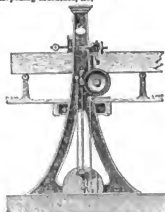
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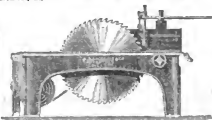
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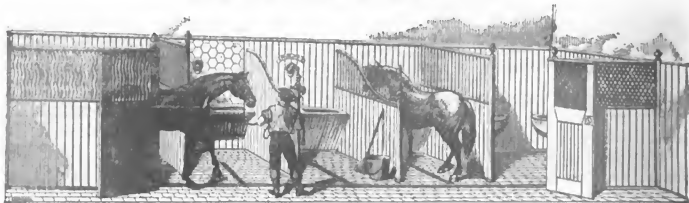
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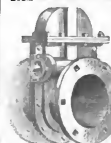
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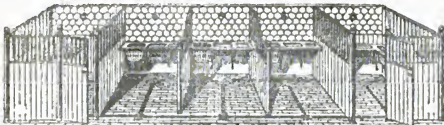
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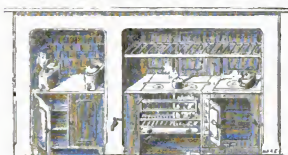


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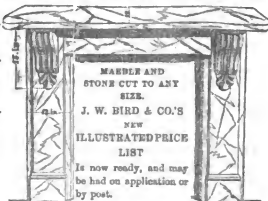
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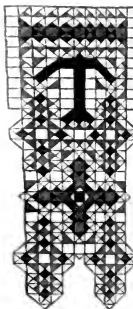
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The Builder.

VOL. XXVIII.—No. 1428.

Architecture and Legislation.



THE juxtaposition on our table of several forms of Building Act, proposed or in force, suggests some observation as to the manner and degree in which legislation of this nature affects architecture as an art, and whether prejudicially or otherwise. In the main, of course, such Acts have a practical object only, that of insuring sanitary and constructive safety and completeness in the street buildings of large towns, and are for the most part negative rather

than positive in their provisions, and scarcely affect general architectural construction, as they are only designed to insure a certain minimum of provision for stability, quite below what in most cases would be deemed a necessary foundation for anything like an effective architectural design. Where the provisions of the Building Acts infringe at all upon the province of the architectural designer, it is commonly in the "preventive service,"—in forbidding as a contraband nearly everything which goes to make a building picturesque and effective. What would have become of those picturesque bits of old street architecture in some of our own as well as in Continental towns, which painter and architect alike delight to sketch, had those who were to erect them been clogged by such a sentence as this, enforced by official warrant:—

"No projection shall be built or made up or before any building in any street within 10 ft. above the level of the foot-pavement of such street, so as to extend beyond the general line of the walls of the building, except architectural decorations attached to, or forming part of, an external wall, and projecting not more than 2 in. therefrom; and no cornice, coping, or balcony above the level of 10 ft. from the foot-pavement of such street, shall project more than 18 in. in streets not exceeding 30 ft. wide, and no other architectural decoration above the level of 10 ft. above the street shall project more than 6 in." &c.

This is from Section XXIV. of a proposed new Building Act for Liverpool, originally intended to have been brought before Parliament this session, but which is at present in abeyance. We do not say at once that some such clause may not be absolutely necessary in relation to buildings which are to flank crowded thoroughfares, and where provision must be made to obviate unnecessary drip in wet weather, as well as possible danger from imperfectly-constructed overhanging features. But under such regulations, what would become either of such buildings as those in the Florentine palatial style, with its grand projecting cornice, or of the aforesaid picturesque oriels and corbelled upper stories of Medieval Germany? It should seem, according to this, that we must choose between safety and commodiousness on the one hand, and architectural effect on the other hand, as regards street architecture. Must we really accept this fate? Is there no safe storage between Scylla and Charybdis, no compromise possible between the requirements of the architect and of borough officials? At all events, this species of restriction has been of pretty

long date in Liverpool, for we find, under the Section LXVII. of the existing Building Act for that borough a similar provision in even more stringent terms:—

"And be it enacted that no projection of any kind shall be made in front of any building over or upon the pavement of any street, except for shop fronts or for doorways, and no part of such shop front or doorway in streets under 10 yards wide . . . shall project more than 6 inches, except the cornice, which may project 10 inches, &c. Provided always, that it shall be lawful for any person, with the consent in writing of the Council, testified by a copy of some resolution in writing of the Council, certified under the hand of the Town Clerk, and also with the consent of the Commissioners for the better paving and sewerage of the town of Liverpool, testified by a copy, &c. (as before)—to build with or add to, or cause to be built with or added to, any building fronting any street, any projecting pilaster which shall not project more than 6 inches, or, in streets more than 10 yards wide, more than 12 inches from the perpendicular line of the front brick or stone work of the building where it fronts such street."

This solemn and elaborate preparation for the legalising of the regulation shop-front pilasters, the most thorough specimen of bastard architecture in existence, is amusing enough in its way, but it is difficult to know why the framers of Building Acts should show such a special delicacy of feeling with regard to shop-fronts. The fact is that the prevailing style of shop-front architecture is the curse of our towns, architecturally; and so far from seeing clauses made specially to facilitate this sort of production, we would rather see it negatived by some deftly-framed prohibitory clause, that no one shall dress up his shop front in wooden pilasters and sham architraves, but erect it in an honest and solid manner on sufficient brick or stone piers, &c. The proposed Metropolitan Building Act does offer some slight check upon over-much of cradling and bracketing architecture, in the provision (clause 69), that,—

"No part of the woodwork of a shop-front shall be fixed higher than eighteen feet above the level of the nearest public way, or nearer than four inches and a half to the line of junction of any adjoining building; and a pier or corbel of brick, or other fire-resisting material, at least four inches and a half thick, shall be built or fixed next to such adjoining building, as high as any such woodwork is fixed, and projecting, at least, to the extent of such woodwork."

This is a provision in favour of actual, though not of apparent, solidity of construction; but it is to be regretted that a Bill, formed partly under architectural direction, should, while putting a veto (by the clause demanding that all walls be "of brick or stone") upon any kind of genuine timber construction even for shop-fronts, make special encouragement or provision for a conventional screen of wood used in a non-constructive manner. In this point, the old and prepared Liverpool Building Acts also coincide; and we fully concur, as our readers are aware, in the prohibition or discouragement of timber construction in large towns; but it is a pity to see a false use of woodwork encouraged, at the expense of a genuine and true use thereof. The proposed new Liverpool Building Act, it may be observed, ignores wooden bressumers altogether, decreeing iron in all cases; a decree sorely necessary, since a good wooden beam may be as durable as an iron one; certainly, there are wooden bressumers in existence and in good bearing condition, which have stood a longer test of time than we have been able to put iron brams to as yet.

In the matter of roofing, it is worth notice that none of the Acts before us recognise, or at all events encourage in their wording, the portentously high Mansard roofs, which are at present such a feature in all exhibitions of architectural drawings. The existing Liverpool Act, in scheduling thicknesses of walls and other matters with reference to height, makes no account of stories in the roof; and the proposed Metropolitan Act specially provides that "in a building used wholly or in part as a dwelling-house, there shall not be more than one story of rooms constructed wholly or partly in the roof, except with the permission of the Board;" and further that "in a building used wholly or in part as a warehouse, or for purposes of business, and not used in any part as a dwelling-house,

there shall not be any story of rooms constructed wholly in the roof." Such a regulation would probably be equally desirable on constructive and architectural grounds; but some of our warehouse and hotel designers will be shorn of the strength residing, not "in their hair," but in their roofs, by this Dallah of legislation. As to the constructive material of decorative adjuncts, the Metropolitan Bill provides, in general terms, like the existing Act, that "any cornice, coping, facing, window-dressing, portico, porch, balcony, verandah, and balustrade, and every projection or architectural decoration whatever, and also the cornices of any overhanging roof shall, except with the approval of the Board, be of stone brick, tile, artificial stone, vitrified stoneware, slate, cement, or other fire-resisting material." This, of course, precludes wooden ornament, and may deliver us from we know not what possible fantastic tricks of barge-boards and finials; but then we have a parenthetical clause excepting from this dictum not only dwelling-houses "distant at least 15 ft. from any other building," but also "cornices and dressings of window fronts of shops;" and why, we again ask, this exceptional permission to shops to adorn themselves with combustible adjuncts not permitted, in the same situation, to any other class of building? Is it impossible for tradesmen to sell goods without hanging a wooden cornice over their inevitable sheet of plate-glass? It is satisfactory to find there is a limit beyond which masonry piers must be introduced. "When a building, enclosed with walls, is constructed so as to leave on the ground story, or on that story and another story or stories, an extent of opening greater than one-half of the whole area of the vertical face, or elevation of the wall or story or stories in which such opening is left, there shall be sufficient piers of brickwork or other fire-resisting material so disposed as to carry the superstructure." This would put an end to the erection of some marvellous webs of iron and glass which in the streets of certain towns we have seen lowering from pavement to cornice; but we cannot help thinking such stipulations might be carried further, and shop-fronts be compelled to rest in all cases on adequate brick or stone piers. As to the gain in architectural appearance we need say nothing; possibly such a regulation might be accompanied in time by the further advantage of checking the system of competition in mere showiness and ostentation of goods between tradesmen, and suggest a habit of depending for success more on actual excellence and less on show.

If the present aspect of shop architecture reflects (as we think it does only too truly) the falsity and flimsiness of much of our trade materials and trade principles, it is impossible that there should be a converse action, and that a better style of shop architecture, thrust upon them whether they will or no, should exercise a beneficial effect upon the tradesmen of England? The proposed Act for Liverpool deals a blow at stone lintel construction in the provision that "every opening above 2 ft. 6 in. in width which is not arched over throughout the thickness of the wall, or which has not an iron lintel, shall have a discharging arch of brick or stone." The rule does not define whether a window with a stone head and one or more stone mullions is to be classed as one opening without regard to the mullions, or not. It may be pointed out that in certain positions (i.e., near the angle of a building) the "relieving arch" might have a tendency to disturb rather than assist the stability of the structure, by bearing horizontally on the angle pier. When we come to the roofs of our buildings, we find Building Act directions in general a good deal at variance with architecture. The present Liverpool Act, after some definitions and restrictions as to party walls, provides always "that nothing in this Act shall prevent any person from carrying up any wall above the

states of the roof to form a parapet," &c. Not unfrequently it has been found that when a parapet wall has been built over the cornice line, there has been "nothing to prevent" its coming down into the street at very short notice; but the Metropolitan Act is to provide that every building adjoining a street shall have a parapet at least 1 ft. above the gutter. Why the parapet wall, which practically affords the opportunity for distributing an overflow of rain-water within the building instead of outside it, and which architecturally gives the roof the appearance of sinking into the building instead of covering it, should be a feature so favoured by the framers of Building Acts we do not very well understand. The suggested development of party walls generally above the roof is, indeed, rather alarming to contemplate, and sometimes not a little puzzling. Thus the new Liverpool Act directs not only that "every party wall shall be carried up above the roof, flat, or gutter of the highest building adjoining thereto, and also above any part of such roof as shall be within the distance of 3 feet opposite thereto;" but also that "every party wall shall be carried up above any turret, dormer, lantern, or other erection of combustible material on the roof of any building within 4 feet of such party wall," &c. The general impression conveyed by this, after two or three perusals, is, that something on every roof shall be higher than something else on another roof; at all events, the system of "slighting or overcropping" (as *Dogdall Dalgetty* would say), all erections on your neighbour's roof by a brick wall on which should be difficult to carry out in some cases, and leads to some painful considerations as to possible appearances resulting from the rigid enforcement of the principle. The Metropolitan Act gives the same directions in rather more perspicuous wording. We question whether the evident object, the prevention of the spread of fire, would really be attained in any marked degree by these provisions; and the amount of otherwise useless brickwork with which our roofs must be cumbered in accordance with such directions is a matter not to be (and which, indeed, in a literal sense, we fear cannot be) left entirely out of sight.

So far as the examples of architectural legislation before us are to be taken as specimens, it would appear that the tendency of such legislation is to steer clear of any precise reference to architectural features, except with regard to those which, whether rightly or wrongly, are most universally employed, and to make exceptions in favour of these only, placing all others under rigid restrictions. The result is to make the Building Act, in the main, an engine for the favouring and erasing of architectural commonplace, and throwing obstacles in the way of architectural invention. And, of course, it is impossible to legislate definitely, except upon practical matters. But it seems a pity that the framers of such Acts should not have more before their minds the interests of architecture, and provide for judicious deviation from the rules so rigidly laid down by more general provisions.

OLD STAINED GLASS IN ENGLISH CHURCHES.*

Glass of the Fifteenth Century.

THE existing remains of English glass of the fifteenth century appear to be about as numerous as are the examples of the previous period.

Cambridge prelates and glass of this date, in the chantry of Provost Brasie, is restored by Mr. Constable, representing prophets and apostles.

Canterbury Cathedral, in the north transept, has a painted window, the gift of Edward IV. and his Queen; in which are figures, those of their two sons (the princes murdered in the Tower), and those of their daughters, still remaining in it.

In the Church of *Dorchester* (Oxon) is a window of four lights, representing the Stem of Jesse, which affords a unique example of the combination of stonework and stained glass in one mystic design.

In *Durham Cathedral*, the west window represents the tree of Jesse. The window of the south transept illustrates the *Te Deum*. The date is 1450.

The windows of the north aisle of the Church of *Ruton-Sowen*, Bedfordshire, represent the

legends of St. Nicholas and St. Ethelreda. The costumes are of the period of Edward IV.

The stained glass in the east window of the Chapel of St. Gabriel, in *Exeter Cathedral*, dates in the first half of the fifteenth century.

The series of five windows representing Scriptural subjects, apostles, prophets, Roman emperors, &c., of *Fairford Parish Church* (Gloucestershire), were taken in the year 1402 on board a Flemish vessel. Some have attributed the workmanship to Albert Dürer. Copies of these windows are now in course of completion for the South Kensington Museum.

The painted windows of the Church of *Gatton, Surrey*, filled with sacred subjects, were removed from the Cathedral of Aerschot, near Louvain. They are Flemish fifteenth-century work.

In the Lady Chapel of *Gloucester Cathedral* the headings of the window lights retain their original glass. The east window is filled with fifteenth-century glass, white and yellow being much employed.

At *Levington, Cambridgeshire*, the early Perpendicular east window contains a tree of Jesse. The east window of the north aisle represents, in the five larger lights, ten Jewish kings, each with a prophet or saint, and in the smaller compartments, figures of the Virgin Mary, the Evangelists, and other personages, interlaced by a pattern of vine branches. On the south side of the chancel is our Lady of Pity, with a knight and a lady kneeling on either side.

In the north aisle of the north and south choir aisles of *Lincoln Cathedral* are of a Perpendicular character.

In the Wenlock Chapel, in the *Wulton Church*, the upper compartments of the windows are painted with small figures of saints and angels, on a ground of plain glass, charged with various small devices, the arms of John, Lord Wenlock, of *Wenlock, Shropshire*, his garter, and several other emblems, being scattered about beneath the figures.

The patterned glass windows of the *Bede House Hall*, at *Lyddington, Rutlandshire*, are of the latter part of the fifteenth century.

The west window of the south side of the choir of the *Priory Church of Great Malvern* was presented by Richard III. It contains twelve full-sized figures. Six windows on either side of the choir, and the east window of the church, contain much stained glass of the same date. There are illustrations of the Life of Christ, the Last Supper, and heads of saints, surrounded with glories, in the latter. The foundation of the priory, by Saint Wenstan, King Edward the Confessor, Bishop Wolstan, and other bishops and priors, the marriage of Jehohakim and Anne, the Crucifixion, and the Annunciation, are among the subjects illustrated in the side windows. In the Jesus Chapel the north window contains four gospel scenes, and the portraits of the four Evangelists, and the portraits of Henry VII., and Sir Reginald Bray, priory council, to the sovereigns, which are the only perfect remains of a series described by *Ilkington, temp. Charles I.*

There is painted glass, in the Perpendicular style, in the church of *Mells, Somersetshire*; one window containing a figure of Mary Magdalene.

The glass in the windows of the chancel and nave of *Wettedford Church, Kent*, is in good condition. The date is 1465.

The hall windows of *Ockwells House, Berkshire*, are filled with heraldic glass of the middle of the fifteenth century.

In the series of illuminated windows in churches and chapels at *Oxford*, glass of the fifteenth century is to be found in the west window of *Christchurch Cathedral*, in the Church of St. Peter-in-the-East, in St. John's Church, Merton College, and in the hall, New College.

Windows of the fifteenth century exist in the Church of St. *New, Cornwall*.

The Church of St. Thomas, *Salisbury*, contains in the windows of the south aisle painted glass of the fifteenth century. In the banquetting-hall of John Hall, in the same city, is glass of the same, or of the succeeding, reign.

In the south aisle of *Titchill Church, Cornwall*, is a "Cred window," in which each of the apostles is represented, accompanied with the article in the apostles' creed traditionally ascribed to his authorship.

The glass in the east and side windows of the *Beauchamp Chapel, Warwick*, was executed by John Puddle of Westminster, A.D. 1447.

The arms of Bishop Bahwith (three chaplets of holly) in the window of the chapel of the Vicar's Close, *Wells*, date 1407 A.D.

Winchester contains windows in the refectory

of the hospital of St. Cross representing the arms of Cardinal Beaufort, of the latter half of the fifteenth century. Fragments of the time of Edward IV., and Henry VII. are in the library window, the college, in those of St. John's Church, and in the east window of the cathedral.

York is rich in stained glass of the fifteenth century. The west window of the cathedral is by John of Coventry, date about 1404. The east window of the choir is by the same artist, containing 115 Scriptural subjects, each about 2 ft. 2 in. high. In the window of the north choir aisle Archbishop Bowet is represented on his knees before an altar, surrounded by shields charged with the arms of his family. In the south transept eastern aisle is glass of the reign of Henry IV. Glass of the same century is to be found in the windows of All Saints' Church, and in those of St. Martin's Church in the same city.

Glass of the Sixteenth Century.

Some Flemish and German glass of the sixteenth century, A.D. 1537 to A.D. 1543, is in the windows of the Mayor's Chapel of St. Mark, *Bristol*.

A twenty-six large stained-glass windows, forming a complete history of Our Lord, beginning from the birth of the Virgin Mary, are in King's College Chapel, *Cambridge*. The date is 1527-1531. In the chantry of Provost Brasie, in the same town, is some glass of the same age, restored by Mr. Constable.

Exeter Cathedral has a marigold window, with fragments of sixteenth-century glass, in the Chapel of the Nine Altars.

Lichfield Cathedral contains some Flemish glass, from the Cistercian Abbey of Herkenrode, near Liège, dating 1530-1540 A.D. In the aisle of the south transept is to be seen Mary Magdalene at the foot of the Cross, together with the figure of a benefactor to the Abbey. In the north choir aisle, we have the Holy Trinity in the centre, a knight supported by St. Herbert on one side, and a shield of arms on the other. In the Lady Chapel are five windows representing subjects from the New Testament, and two containing kneeling portraits of patrons and benefactors of Herkenrode.

The new window of St. Margaret's Church, *Westminster*, is said to be the finest specimen of stained glass in London. It is in the early cinque-cento style, and was executed for Henry VII. at Gouda.

A glass window of this period, from the Cathedral of Basel, is in the possession of Mr. William Smith, Upper Southwick Street, *London*. *Oxford* contains glass of the sixteenth century in the Church of St. Peter-in-the-East, in the hall of New College, and in the Bodleian Library.

In the Church of St. Neot's, *Cornwall*, are six windows, containing Old Testament subjects, of the early part of the sixteenth century. There are the portraits of benefactors, patron saints, labels, the history of St. George, and the legend of St. Neot, each adorned with inscriptions.

The west window of *Salisbury Cathedral* contains the shield of arms of Bishop Jewell. Date, A.D. 1562.

Southwell Minster has the four lower east windows of the choir filled with French cinque-cento paintings, presented by Mr. Gully Knight in 1818, representing the Baptism of Christ, the Raising of Lazarus, the Triumphant Entry into Jerusalem, and the Mocking of Christ by the Jews.

In the west window of *Wells Cathedral* is cinque-cento glass, brought partly from Bona, and partly from Cologne, by Dean Creyghton, illustrating the life of John the Baptist. The date, 1507, is traceable on one of the lights.

Winchester Cathedral has the east window filled with Perpendicular painted glass of a date a little earlier than 1525, the work of Bishop Fox, whose arms and motto, "Est Deus Gratia," are introduced. In point of execution it is said to be as nearly perfect as any painted glass can be. In both aisle of the choir, and in the clerestory windows, as well as in the east window of the south transept, are also remains of cinque-cento glass.

There is glass in *York Cathedral* referred to the sixteenth century, but the description of its date and character is contradictory.

The famous window, which the Constable Anne de Montmorency commissioned Bernard Palissy to paint for the Château de *Envermeu*, representing the history of Psyche, have been removed to the residence of M. le Duc d'Annam, at Twickenham.

* See p. 468, ante.

Glass of the Seventeenth Century.

The windows of the aisles of the choir in Bristol Cathedral are filled with enamelled glass of the seventeenth century. The subjects are, on the north side, Jonah escaping from the whale, the Ascension, the Agony in the Garden, the Ascension of Elijah, and the Sacrifice of Abraham; those on the south are the Expulsion of the Money-changers, Jacob's Dream, the Tribute Money, Michol's death, and Abraham and Gideon and the Fleeces. Much of the original glass has been replaced by "pot glass," the tangle of subjects is unprecedented.

The stained-glass windows of Archbishop Abbot's Hospital Chapel, Guildford, date in the seventeenth century.

The Flemish painted glass in Lincoln's Inn Chapel, London, is by Abraham Van Linge. Date, A.D. 1630.

The glass in the six-light window of the north transept of Malvern Priory Church, containing full-sized figures of St. Paul, St. John Evangelist, and St. John Baptist, and passages in the life of Christ, divided by labels, is German, of the seventeenth century.

The windows of the Church of St. Stephen, Norwich, date A.D. 1601. Those of the Church of St. Michael Coslany, in the same city, date in 1610.

In Oxford, the window of the south aisle, the north transept, and the transept aisle, of Christ Church Cathedral, were executed by Abraham Van Linge, A.D. 1630-1640. St. Peter's Deliverance from Prison, in the north aisle, is by Isaac Oliver, A.D. 1700. There is also glass by Van Linge in Balliol College Chapel, in Lincoln College Chapel, in Queen's College Chapel, in University College Chapel, as well as glass of the same date in the Chapel of Magdalene College.

Glass of the Eighteenth Century.

Bristol Cathedral exhibits in its west window inferior stained glass, dating 1710, A.D.

The balcony in the upper part of the east window of Exeter Cathedral is dated A.D. 1766.

The great west window of the nave of Lichfield Cathedral is by Brookes, A.D. 1776.

In London, the Resurrection and the Last Supper, by Joshua Price, are represented in the Church of St. Andrew, Holborn, date A.D. 1718. There is some late Flemish glass in the Church of St. George, Haover-square.

Oxford has glass painted by Joshua Price, circa A.D. 1702, in the chapels of Magdalene and of Merton Colleges; and eighteenth-century glass in the Church of St. Peter in the East, and New College Chapel.

The east window of St. Asaph Cathedral was glazed by Eggington after a picture by Albano. Date, A.D. 1780.

The Elevation of the Brazen Serpent, designed by Mortimer and executed by Pearson, the gift of the Earl of Radnor, fills the east window of the choir of Salisbury Cathedral. Date, A.D. 1710.

The west window of Worcester Cathedral dates A.D. 1792.

The rose-window in the north transept of Westminster Abbey was filled with stained glass in A.D. 1722. The great west window was executed in 1735. Neither of these windows is mentioned in the "Universal Art Inventory."

In the chapel of Herick's Hospital, Edinburgh, is the outside of churches of Ely, Peterborough, and Ripon; and in the church of Morley, Derbyshire; Riverhall, Essex; and West Wickham, are painted windows, cited in the Inventory, the dates of which are not stated.

We thought it due to our readers, as before hinted, to verify the references which we so freely made in Mr. Cole's Inventory, to the late Mr. C. Winston's valuable work on ancient glass. As far as the general index part of this work is concerned, the churches named therein are all duly to be found in the Art Inventory. But in the woodcuts, the coloured plates, the preface, and the appendix, to this volume, occur the following additions to the information given in the Art Inventory. They will be found to be neither few nor unimportant.

Early English glass is figured from a lancet window in the Church of Stockbury, Kent, of the latter part of the thirteenth century.

A lancet window of pattern glass, in the Church of Stanton Harcourt, Oxfordshire, dates in the third quarter of this century.

Decorated glass, of the first quarter of the fourteenth century, is to be found in the cinquefoil tracery lights of two windows in Newark Church, Sussex.

The same date is attributed to a patterned panel and figure, in brown enamel, in Stoodland Church, Kent. A St. Mathew in a tracery light dates some fifty years later.

In a tracery light at Weston-on-Trent, is a shield, with the arms of Berkeley, in brown enamel, dating some after 1361.

At Southfleet, Kent, exists a patterned window of coloured glass, of the third quarter of the fourteenth century.

At Worfield, Kent, a head in brown enamel dates before the middle of the fourteenth century.

From Uxelford, Wills, we have a patterned quarry, painted with a leaf in brown enamel, of the same date; and a fleur-de-lis from Great Dunmow Church, Essex, is an example of an heraldic bearing of the period.

Perpendicular glass of great beauty is figured by Mr. Winston from Wenlip Church, Leicestershire, containing a complicated emblem of the Trinity, and the arms of John of Gaunt and of Thomas of Woodstock, circa 1390.

Woodmansters Church, Surrey, has a *crucis* figure, or apostle, in brown enamel, of the third quarter of the fourteenth century.

From Much Hadham Church, Herts, we have a circle containing the monogram I.H.S., surrounded with the motto, *hec est nomen super omnia nomina*.

Stotving Church contains two portraits of members of the Stotving family, of the early part of the reign of Edward IV. Two female heads, of the same date, in yellow and brown, are to be found in Tharsted Church, Essex; and tracery lights in the Church of Temple Rothley, Leicestershire, are of the same date.

At Reynold's-place, Horton Kirby, Kent, are the arms and crest of John Bowes, who died 1698 A.D. At Franks, Kent, are the Balhurst arms, dated 1691. From Lambeth Palace is figured a lily, in stained glass, forming part of a border round the arms of King Henry VII.

Mr. Winston further cites, as instances of false heraldry in glass, arising rather from the exigencies of the material than from the ignorance of the artist, the Royal arms of Edward II, in the Church of Fawkham, Kent; the arms of the family of Broockham, temp. Edward III, in Lokington Church, Kent; those of Bowes, in North Cove Church, in the same county; and those of Philip II of Spain, in Wilton House, Wills.

Monumental inscriptions, in most instances accompanying portraits, in stained glass, are cited as existing in painted windows at St. Michael's, Banahaw, Kediton, Chart Magna, Wellsborough, Tunbridge, Holywell Priory, Great Thorne, Cotes Church, Dunthorpe, Bury, Green, Malvern, Aford, and Waplay. Thus the illustrations of Mr. Winston's book alone supply some thirty-five additions to the Art Inventory.

A still larger number of churches containing old stained glass is referred to, in topographical order, in Mr. Franks's "Book of Ornamental Glazing Quarries," published in 1849. This valuable monograph contains numerous drawings of pannels or quarries of old stained, painted, or enamelled glass, each of which contains a perfect pattern, and not a mere portion of a general design. These are distributed as follows:—

Barkhale.—Chobley, Moreton, Wantage.

Bucks.—Ickford, Kimble Power.

Cambridgeshire.—Bourne, King's, Queen's, and Emmanuel Colleges; Cambridge; Chesterton, Ely Cathedral, Fulbourne, Gilton, Harwood, Hildesheim, March, Milton, Waterbeach, Wimpole.

Devon.—Exeter Cathedral.

Essex.—Bromley, Chigwell, Swely, Good Easter, Marks Tey, Pebmarsh, Takeley, Thaxted.

Hants.—Winchester, St. Cross and St. John.

Hertford.—Manley.

Herts.—Great Berkhamstead, Watton.

Kent.—Bethersden, Fawkham, Hardey (Upper), Kemsing, Penshurst, Southfleet, West.

Lincolnshire.—Lincoln Minster.

Middlesex.—Greenford.

Norfolk.—Bexwell, Bressingham, Holm Hall, Southcote.

Oxfordshire.—Chakendon, Headington, Marston; Merton College, Oxford; Stanton Harcourt, Werborough, Watlington.

Somersetshire.—Taunton.

Suffolk.—Brandon, Kanton, Gaeley.

Surrey.—Challington, Newdigate, Ockham, Otwood Church.

Wales.—Peemachion, Carnarvonshire.

Wills.—Sherington.

Worcestershire.—Birta Merton.

Thus the work of Mr. Franks cites sixty-six churches containing old stained glass, only two

or three of which have been mentioned by Mr. Winston, or included in the Art Inventory. Descriptions of each of these windows are desirable, as Mr. Franks merely draws single pannels. It is evident that the remarks which we made as to the large body of information which has to be added to that collected by Mr. Cole, are more than justified, a hundred distinct additions being thus collected from two well-known books alone. As illustrating the history of stained glass, the table we have formed possesses undeniable value. As an exhaustive list of the old stained-glass windows to be found in this country, the information it arranges from the Art Inventory can only be regarded as rudimentary; but it is a rudiment from which may be hereafter developed a full topographical catalogue of English painted windows; and in that hope we commend it, not only to the perusal, but to the collaboration, of our readers.

It is remarkable that the valuable work of Mr. Franks, referring to so many churches not mentioned by Mr. Winston, appears not to have been consulted by Mr. Cole. It is not included in the "List of Works in Art Library containing Information upon Painted or Stained Glass," which is given in the "Universal Art Inventory," although it is entered in the "Universal Catalogue of Books of Art," with the added letters, "S. K.," denoting that a copy is to be found in the Art Library at South Kensington.

COMPLETION AND PRESERVATION OF ST. PAUL'S.

It is not to the credit of England, in the matter of aesthetic education, that the metropolitan cathedral should have been allowed to remain unfinished for nearly two hundred years. Still less creditable is the fact that a statement will be received, by nine persons out of ten, with surprise, if not with incredulity. That such is, however, the plain unvarnished truth, there is no doubt. Grand as is the outline, and careful or even elaborate the external finish, of the exterior of the finest modern Roman building, except one, in the world, the interior yet remains, in the state, save one exception, at which it arrived when the builder proper had nearly completed his work, and the architectural decorator was about to begin his. Wind-tight and weather-tight, externally not only completed by the architect, but fringed with a stone balustrade, erected in addition to the design, and against the will of Sir Christopher, the interior of St. Paul's is yet in the essentially temporary state of an unfinished building. The carvings with which the unrivalled skill of Grinling Gibbons enriched the choir contrast with the unrelieved hue of the monotonous stone and plaster. Still more bald,—nay, positively offensive to the eye,—are the square, thickly-leaded panes of the mean glass windows, which, till very recently, have been the sole lights of the place. It is one that this defect is now, to some extent, in the course of rectification. We wish that we could speak with enthusiasm as to the success of the attempt.

An old engraving exists which shows the interior of St. Paul's richly decorated, according as it is stated, to the design of Sir Christopher Wren. However that may be, there is no doubt that a certain and, indeed, a large amount of decoration is demanded by the very nature of the structure. We cannot compare St. Paul's, classic although we may term it Roman architecture, to those ancient hypothetical temples which owed their grandeur to severity of form and depth of unrelieved shadow. The basilica, not the colonnade edifice, is the primitive form of a Christian church. Vast, high springing arches, or lofty inclined roofs, have been always required to shelter the thronging worshippers from northern climates. It has been the habit of the pious, certainly for fourteen centuries, to enrich the interior of churches of Romanesque and Roman design with colour and with gold; and that with a splendour proportionate to the structural importance of the work. In many cases the gleam of coloured marbles, the glitter of gilded bosses, and the rich warmth of painted medallions, but not on the eye of the visitor who enters the church, with a beauty for which the modest severity of the external architecture had not prepared the imagination. Who can forget the splendour of such interiors as that of the Church of the Annunziata at Genoa? The enrichment which in Gothic art is produced by the chisel of the sculptor, in moulding, and foliated capital, and delicately cascading

ashire, is supplied, in Roman structures, by marble, by gold, and by colour. The "dim religious light" of the stained window is essential to the character of each.

It need not be added that the movement on foot for completing the interior decoration of St. Paul's Cathedral is one to which we shall be most happy to contribute as far as our support as lies in our power. We might have supposed, indeed, that it was only necessary for the great almsgiving public,—which has been stated to subscribe an annual sum so large that we hesitate to write it, to the various religious and benevolent objects of the metropolis,—to be made aware of the want, to find the means for supplying it, but for the failure which attended the first appeal. When, after so slender a stimulus, the dignity of the Cathedral, and the worshipful authorities of the City, have awakened to the fact that, as regards this well-known Church, they are in fact "poor, and blind, and naked," we cannot believe that it will be long before they remove the stigma from the City.

We wish good speed to those who have taken in hand the completion and adornment of the Cathedral; and, referring to what we have previously said concerning the effect of the operations for the subterranean Metropolitan Railway, we appeal to them, in so doing, to keep—by day and night—a sure watch on the yet more important point of its permanent stability.

PHOTOGRAPHS ILLUSTRATIVE OF THE ARCHEOLOGY OF ROME.

A selection from the large number of photographs that have been made in Rome, under the direction of Mr. J. B. Parker, is now on view at the German Gallery, Bond-street, and catalogues of the whole are published. Mr. Parker has come to the conclusion that the city of Rome was built upon the great earthworks of the primitive fortification, which have governed the plan of the city, and have had great influence on the sites and plans of the principal buildings. These gigantic earthworks consisted, like other primitive fortifications of ramped cliffs, of terraces and trenches. They are very much obliterated by having been built over for many centuries, but the demolition of these buildings has brought the original work to light in many places, as in the Palatine, where parts of the wall of Remulus of Etruscan character, and the foundations of his towers, are visible at the north end, opposite to the Capitol. These towers have evidently been left unfinished, and have been built over in the time of the Republic and of the Empire, and in the Middle Ages; but all these buildings being now destroyed, the foundations of the towers are visible, and photographs of them will be found in his series. The wall of Servius Tullius is visible in many places.

The great wall of Aurelian, thirteen miles long and 50 ft. high, with a corridor for the sentinels along the inside of it, is also copiously illustrated in another series of photographs. And the gateways which occur, many traced into fortresses by Honorius, A.D. 400, are also illustrated. The aqueducts for about a mile form part of the wall, and were incorporated in it by Aurelian, as were other buildings, such as the Prætorian Camp, the Senoniarum with its amphitheatre, and the Lateran; the remains of the great wall are traced also in the Tiber, and in the Transtevere going up to the Janiculum. These form another series.

The aqueducts have been traced from their mouths to their source, and there is in the room a remarkable plan of them from the sources to Rome. There are photographs of the numerous bridges, some of which are more than 100 ft. high, across the valleys and gorges in the mountains; then, descending to the "Campagna" round Rome, we have the "Piscine" and the arcades, till we arrive again at the walls of Rome. It is shown that one of the finest of the aqueducts, which has been called for the last century or more "Aqua Alexandrina," because it was supposed by Fabretti to have been built by Alexander Severus, is really of the time of Trajan and Hadrian, two centuries earlier. This is proved by the construction of the arcade, and of the walls of the *cistella ovata*, or reservoir, by the side of it. It is also confirmed by an inscription of Hadrian found on the first stairway near Gabil, by Visconti, in the last century, since the time of Fabretti.

As a chronological series, the photographs are intended to supply a type for each half-century,

from the time of the foundation of Rome to the sixteenth century; and they apply to the buildings over the greater part of Europe, as the history of architecture shows that the art of building in stone came from Rome, or through Rome to all the provinces of the Roman empire, and the construction of walls is every where everywhere the same. This series affords important help towards a real history of architecture, such as no designs can supply. Few drawings can be relied on as to the absolute proportion of the stones or bricks, or of the mortar in the joints between them; yet these are details which are often the best guide to the age of the building, or at least of the original parts of it, and which enable us also to see the changes that have been made.

The tombs and cemetery chapels, the fresco paintings in the Catacombs (taken with magnesium light), the mosaic pictures in the churches from the fourth century to the fourteenth, are extremely valuable for the history of drawing.

The mosaic pictures with which the churches are decorated date from the time of Constantine, and a large proportion of them are before the period when we have no other church or other buildings in the West. At a later period, the beautiful church furniture of the Comital family, their altars and amboes, and Paschal candlesticks and tombs, enriched with their admirable ribbon mosaics, are not to be found out of Italy. Of these there is a fine series of photographs.

Concerning the constructions of walls, Mr. Parker has elsewhere said,—

"For the construction of walls, the brickwork of the time of Nero is the finest in the world. The bricks with which the walls are faced are so thin that we can count ten to the foot, including the mortar. This perfection did not continue long. In the second century there are eight to the foot, in the third century six, and in the fourth century four only, as in modern brick walls. This is a useful general guide to the age of a building in Rome, because the walls frequently remain when all the ornament has been destroyed. The Roman temples of the first century were better than at any other period, but their masonry temples were no better than those of Greece, and some of the largest and finest buildings in Rome belong to the second and third centuries, although their details do not equal, in purity, those of the first. The magnificent theatre of the Antonines, called after Caracalla, are not equal in the construction of the walls, or in the architectural details, to the theatre of Titus and the House of Nero; but there can hardly be said to be any perceptible falling off in the buildings of the time of Trajan and Hadrian. Many of the temples were rebuilt by Septimius Severus in the beginning of the third century, and their old names retained, as is expressly told by the historian of his life; and this is a point always to be considered in examining the Roman temples."

Public bodies,—the British Museum, for example,—ought certainly to become possessed of a set of these photographs, and so aid in an important undertaking. Individuals would find selections of great interest might be made from them. The photographs that have been taken by artificial light in the Catacombs may serve to dispel some illusions as to dates.

LECTURE BY MR. SCOTT ON CHESTER CATHEDRAL.

A CROWDED and enthusiastic meeting in promotion of the restoration of Chester Cathedral, which was held in Liverpool in St. George's-hall, on Tuesday last week, was followed up, in Chester itself, by a lecture from Mr. G. O. Scott, the architect for the restorations. The lecture, delivered in the fine room which is now called the King's School and which was formerly the Refectory of the Benedictine Abbey connected with this church. The Dean was in the chair, and made a few prefatory remarks, dwelling especially on the importance of ultimately including the great south transept with the nave and the apse under the tower, in one general restoration, so that the whole interior might be kept in its ancient dignity.

Mr. Scott, in opening his lecture, said that unlike the majority of the great Mediæval churches, the origin and date of the foundation of this cathedral were unknown. Chester having been a Roman city, it followed that it must, during the last century of the Roman occupation—when the empire was Christian—have pos-

sessed churches, and one might have stood upon this site. The same might be said of the interval between the departure of the Roman legions and the Anglo-Saxon conquest—a period prolonged in this instance through the district which included Chester having been held much longer by the Britons than most parts of England. They were Christians, and most have had churches, and one might have stood here. Whoever founded the original church was said to have been Bishop Edwin, but St. Peter and St. Paul; and Mr. Parker conjectured it to have been Romano-British. During the Anglo-Saxon period, however, the dedication of the church was changed from St. Peter and St. Paul to St. Werburga and St. Oswald. This was at least as early as the reign of Athelstan, as he and several later kings are recorded as having paid their devotions at St. Werburga's Church. The lecturer then referred at some length to the personal histories of the Princes, St. Werburga, and St. Oswald, King of Northumbria, as a reason for the change of dedication. A century and a half later we find the church to have become ruined, probably during the second great Danish invasion, but restored or rebuilt during the reign of King Edward the Conqueror, by Leofric, the wise and great Earl of Mercia, and the pious Countess Godwin, or Godiva, of famous memory,—the restored English rule thus again doing homage to the memory of their royal English saints; nor, when our country fell once more under foreign domination, was their memory discredited; for the first Danish Earl, Hugh Lupus, sister's son to the Conqueror, and his countess, Ermentrude, refounded the church on a far grander scale, converting it from a church of secular canons (just such a collegiate body as now exists) into a Benedictine monastery; and that not at the instigation of the English laity, but of the great foreign ecclesiastic, the Abbot of Clugny, who had become Archbishop of Canterbury. Thus we have had in review a long series of kings, princes, and rulers, as well as of royal and noble ladies—century after century—promoting the interests of this church; and we find that this only shared with many others their pious and princely maintenance. Yet it is now as much as we can do to get funds for the repair of our great churches which remain to us of their great founder in a state of decent repair!

Not only was it customary with the Normans while dealing with the ecclesiastical structures of their predecessors, to make a clean sweep and reconstruct them on a greatly enlarged scale, but the change from the Benedictine to a small collegiate institution to a great monastery of necessity involved this. It is, therefore, not to be wondered at that no vestige of the older buildings remain. Our architectural investigation must consequently commence with the new foundation begun by Hugh Lupus about 1156. The previous church, if only a restoration of the older Saxon church, was surely of no great dimensions. The surviving portions of Norman work, especially in the north transept, were next described. About 1195 the eastern parts of the building appear to have been much dilapidated, and appeal for help was made by the monks in a lugubrious tone. An interesting period followed, marked by the frequent presence of King Edward I. in Chester, when grants of venison from the forests of Wirral and Delamere were made to the workmen who were carrying on the work of construction, under the vigorous rule of the Abbot Simon of Whitchurch. One of the most attractive parts of the lecture consisted in a description given of the methods by which the true form of the tower and cornice, and especially of the singular terminations of the south aisle of the choir, had been discovered by the help of fragments disinterred in the process of reconstruction.

Towards the close, Mr. Scott said,—You will have gathered, from what I have narrated, that your cathedral, though its beauty is now so sadly dimmed by decay and barbarous repairs, is a building of great architectural merit, and of great antiquarian value. I will add, that few of our cathedrals exhibit a more complete consecutive series of specimens of the different varieties and chronological phases of our Mediæval architecture, from the Norman conquest to the Reformation. Of the finest Norman we have a specimen in the north transept. Of the twelfth-century Norman we have the remains in the north-western tower and the substructure of the abbot's hall, with, perhaps, the recesses for tombs in the north wall towards the cloister; of yet later Norman, we have the passage from the

abbots' house to the cloister, with the chapel above it; and later still the doorway from the eastern cloister into the nave. Of the transitional style from Norman to early English, we have the eastern chapel of the north transept, now the vestry; also some beautiful fragments lately discovered. Of the fully-developed early English, we have the chapter-house, with its beautiful triforium, and the choir and choir-aisles produced. We have also the beautiful refectory of the monks in which we are now assembled, and which contains one of those exquisite pilpits—such as we find at Beaulieu, at Shrewsbury, at St. Martin aux Champs at Paris, and in many other monasteries. Of the transition from early English to the Middle Pointed or Decorated style, we have the Lady Chapel; the somewhat more advanced decorated we have the two eastern bays of the choir aisles, with a further advance in their western bays and the eleatory. Of the later decorated, we have a truly magnificent example in the south transept, and smaller ones in the substratum of St. Werburg's shrine, the sedilia, and the choir-arch. Of the early Perpendicular, I should have thought that the choir and choir-aisles in the clearstory of the south transept of the eastern bay of the nave; of the more advanced style, in the central tower, and in the stallwork of the choir; of the latest phase, in the west end, and probably in the eleatory of the nave. The cloisters also belong to one of these two last periods. There should have been the whole series of changes which the Middle Pointed style represented in this one cathedral—all alike, however, clouded by decay, and all crying equally loudly for restoration. It is for you to respond to that cry, and to render this, the great central temple of God in your diocese, worthy at once of its sacred uses, of its rank, as the great diocesan cathedral, and of the importance of the place it is holding. It is for you, the most princely residents of the nobility, and the greatest mercantile emporium of the greatest commercial country in the world. The church has come down to our day—what with decay and barbarous repairs—a mere wreck of what it once was—a melancholy relic of former ages, and a reproach to our own. It is for you to do homage to the past, and to the present, by liberally aiding your most excellent and patriotic dean in effecting its proper restoration.

After a vote of thanks had been given to the lecturer, the company followed him from the King's School to the Chapter-house, where he commenced to point out in detail those features in the Cathedral which had been referred to in his lecture. The Chapter-house is regarded as one of the most beautiful rooms of the thirteenth century. Its exact age was not known; probably it might be placed in the latter quarter of that century. In its predecessor many of the abbots, including the famous Whitechurch, were buried, and the Choir of the house, the choir of the west end, was probably the choir of the twelfth century. It is probable that the glass of the western window was borrowed, and that at one time the monks' dormitory came up to it. Passing to the north transept, he called attention to the veritable work of Hugh Lupus, which was to be seen in the arcade over the head of the transept. In the eastern bay, no doubt the twelfth century project for an apsidal chapel, and the outline of the arch by which that was entered has been displaced by the taking off of the plaster. The piscina was not earlier than 1190 or 1200. Passing through the vestry, where the details of the Norman arch were more clearly seen, he pointed out the door which led to the outside of the north aisle, where he called attention to the base of one of the enormous buttresses, then to the corner of the Lady Chapel, where the lighter buttresses were found, which gave the true position of the windows and the direction of the mullions. On the south side he pointed out the base of the great pier, the pierced parapet and toothed ornament, and covered under the roof was removed, and also pointed out the arch above the end of the south aisle, which bore a spire, and the aisle, above being constructed in an apsidal form. Farther on he noticed the sloping form of the buttresses, and the position of the door which gave an entrance to the choir at one time by the Benedictine monks, the tomb of the author of the "Polychronicon" being near it. The Lecturer passed on to the north transept, then into St. Oswald's Church, where he spoke of the chapels of St. Nicholas and Mary Magdalen, and pointed out the door which led to the south transept. The route was into the south aisle, through the choir, to the end of the north aisle, but not into the

Lady Chapel, then back to the choir, and through the nave to the westward, and into the Norman tower; but here, we believe, the perambulation ended, as it was near five o'clock, the time for evening prayers.

ART-UNION OF LONDON

THE following is a list of the principal works selected by prizeholders to this date:—

From the Royal Academy—"More Eastward, happy Earth," &c., C. J. Lewis, 1864; Henry II. and Diana of Poitiers, A. H. Tourneur, 1860; The Village Violinist, E. Opie, 50s.; A Mountain Stream, Aber, North Wales, J. Taylor, 50s.; Near Bethesda, North Wales, F. Williams.

[illegible]

From the Society of Painters in Water Colours:—The
Bravo, Venice, W. Calver, 304; The Great Hall, C. Smith,
305; Bay of Naples, J. G. Gossall, 311; 100.
The Apple Tree, J. J. Jenkins, 304; Fruit-rose—Limer-
ing, J. Naffei, 324.
From the Society of Painters in Water Colours:—The
Baths, with the Cathedral, St. George, on the Lake,
E. Richardson, 94; 104; On the Avon, at South Bre-
nford, J. G. Gossall, 311; 100.
Naples, T. L. Bowditch, 251; At Chilton, near Tor-
quay, John Chase, 155; 150.
From the General Exhibition of Water Colour Drawings
at the Royal Academy, 1844:—The Moor, J. Monning-
ton, 100; The Moor, J. Monnington, 100; The Moor,
Portsmouth, North Wales, J. Needham, 155; 150; "Wat-
ing, Warching, Hoping-still," J. C. Russell, 156; The
Woods, J. C. Russell, 156.
From the Old Broad-street Gallery:—Fishing Boat
Baking—Boats running into Harbour, T. S. Holme
100; On the Moor above Clidish—Loch Awe, J. S. Holme
100.
Barnstaple, 100.

ON THE CHEMISTRY OF POTABLE WATERS.*

It is not my intention to give an account of the functions performed by water as a physical agent; of the wonderful changes it has worked and is working upon the face of the globe; of its power as a transporting agent; nor, indeed, of the manifold purposes to which it is turned into usefulness by the ingenuity of human industry. Yet, as I have already, as a store, as a source, power, I may just mention that we possess an immensity in our tidal rivers and around our coasts, which as yet is almost undreamed of in our philosophy; its magnitude is such that when viewed side by side with all the combined sea-power of Britain, and the appliances which it affords for navigation, and in the hands of a Wellington in science greater changes by far may be effected from this source than from the steam of Watt and of Stephenson. But I will lay before you some of the leading characteristics of water as employed for sanitary purposes, such as the source, the water, the purification, the distribution, the source and mode of detection, examination, as possible estimation.

Passing over the modes in which chemists formerly examined water, I come to the

Nitrogen, Carbon, and Ammonia Method.

In the present day, I believe, there are only two methods of approximately determining the value of domestic waste. The first is known as Frankland & Armstrong's gasometric system, and the second as Wanklyn, Chapman, & Miles Smith's ammonia system. Between each set of inventors there exists great rivalry, each insisting on the superiority of its own method to the detriment of the other. Of this rivalry I will merely note my belief that, *theoretically*, Frankland's process is as perfect as any process is ever likely to approach; while, in practice, Wanklyn's ammonia method is much to be preferred. The being so, I shall give you a brief outline of the gasometric method of Frankland, and the process of ammonia estimation as illustrated according to that of Wanklyn, premising that the results are such as I have myself personally obtained.

• By Mr. Richard Weaver, C.E.

Frankland & Armstrong's Gasometric Process for the Analysis of Organic Matter in Water.

These chemists endeavour to show not the actual weight of organic matter present in a given bulk of water, but that of some of its constituents, and also some of the products of decomposed organic matter, which latter is termed by Frankland 'the skeleton of sewage.' First, the organic carbon and the organic nitrogen. These are converted into gas, and measured as carbonic acid and as nitric oxide. Second, the nitrates and nitrites; and, lastly, the ammonia. By this means the whole of the nitrogenous part of the waste is made known, and an estimate is made of the nitrogen rendered harmless by oxidation, and of that which exists as unrepresen organic matter.

The first operation is to evaporate a known bulk of water to dryness with a prior addition of sulphuric acid, to expel all carbonic acid from carbonates, and also to destroy the nitrates and nitrites; the residue now contains the whole of the nitrogen of the organic matter and the nitrogen of the ammoniacal salts; and by making a separate estimation of the latter,—through the Nessler test, to be hereafter described,—and subtracting this from the total nitrogen obtained, we arrive at that corresponding to the organic nitrogen.

The process by which these determinations are made somewhat resemble the combustions in organic analyses, but are much more complicated, and require greater delicacy of manipulation.

As an indication to the limits of this test, it is stated by Frankland that the $\frac{1}{10000}$ part of a grain of nitrogen and the $\frac{1}{100000}$ part of a grain of carbon can with certainty be determined.

I shall not enlarge upon their mode of estimating the quantity of nitric acid; I have already indicated it is done as nitric oxide and the volume of gas measured off.

But I must draw your attention to a characteristic point in all the analyses of waters by Frankland, and notably indicated in the recent report of the Royal Commission for Rivers Pollution, and in the examination of the metropolitan waters.

I refer to "the previous sewage contamination" column of such analyses. This question is a moot point with chemists, some considering it almost a worthless indication, and others insisting upon its great value in deciding the relative goodness or badness of potable water.

For my own part, I incline to think it as a somewhat vague term, and calculated to mislead the public, not as being worthless in its indications, but as really showing too little.

By the term "previous sewage contamination" would generally be implied the actual quantity of sewage with which a water was, or had been, contaminated at the period of its examination; but such is not the case, as I read Frankland's definition of the term, which, expressed in a few words, means the actual present amount of the skeletons of sewage,—of that which *was*, and has no reference to that which is at the present time, either on the surface or in the water.

present most active and living sewerage column.

From the fact that the probable water may contain various quantities of sewage, and yet, according to the "sewage contamination" column of Frankland, no return would be made, and, by inference, that no sewage was present. That this is so, I may mention, a certain water was examined repeatedly by me, at intervals—which said water shall be nameless—and I always found indications of sewage matter; and, on turning for verification to Frankland's sewage contamination column, in his column of the same water, I find that the previous sewage was not there. Now, this may be considered as either discouraging or encouraging, as viewed from opposite motives; and yet it is easily explained from the fact of my showing active and putrescent sewage, or analogous matter, whereas Frankland's column merely shows that which was ancient sewage, but is now no longer sewage. And for this, as one ground of objection, I must protest against the term, "previous sewage."

We now arrive at the method devised by Professors Wanklyn, Chapman, and Smith for determining the organic matter in water by

The Ammonia System.

Coupled with this, I shall introduce you, some what briefly, to a general system of water analysis, as suggested by these gentlemen, promising that much of it is obtained from older methods, now broken up and partly re-absorbed

in modern systems. I divide the course into six divisions, as follow:—

- 1st. Hardness.
- 2nd. Chlorine.
- 3rd. Total residue and loss on ignition.
- 4th. Nitrates and nitrites.
- 5th. Ammonia.
- 6th. Organic matter.

Hardness.

The hardness of water has reference to its soap-destroying powers, and is caused by the oxides of calcium, magnesium, and iron, combining with the fatty acids of the soap forming insoluble salts; and, so long as any of the earths remain in solution, the soap cannot exercise a detergent action; hence the value of soft water for cleansing purposes. This which I now hold before you is a solution of soap in aqueous spirits of wine, and is standardised by a somewhat tedious process to an equivalent of 16 grains of calcic carbonate per gallon of water; or, in other words, corresponds to 16 degrees of hardness and with 1,000 grains of water of such hardness, 32 test measures, or 320 grains of soap solution, will just neutralise, and cause a lather to form, on thoroughly agitating, and will last about five minutes.

Upon such a water I now operate, and note the result.

Chlorine.

The reason is for determining chlorine in a potable water that it points to a possible origin in sewage, for no sewage can exist in water without chlorides being present, sewage being rich in chlorine, especially from the urine. Yet on the other hand, chlorine may very probably be present without any sewage, and it becomes a problem whether its source is due to sewage or to the geological character of the strata through which the water may have flowed.

The determination of the quantity of chlorine is very simple, and yet wonderfully accurate.

We first prepare a solution of argentic nitrate in pure distilled water, and to a known strength. To the water under examination we add a few drops of neutral potassic chromate, and then the silver nitrate,—as in the experiment now before you,—until a faint tinge of reddish coloured silver chromate denotes the end of the chlorine reaction; and from the amount of silver solution employed we estimate the chlorine.

Total Solid Residue, &c.

For this experiment it is essential that the quantity of water employed shall be very accurately measured, and that a delicate balance is at command, because each milligram—about $\frac{1}{100}$ part of a grain of residue is equivalent to 1 grain per gallon of water.

The apparatus which is usually employed for the purpose of estimating the total solid matter contained in a water consists of a small copper or tinned vessel for generating steam. Through the mouth of the vessel passes a perforated cork, and again a large glass funnel; into this latter is arranged an accurately weighed platinum dish. We now take 70 cubic centimeters of the water under examination, and place it in the platinum dish; steam, being generated in the lower apparatus, rises through the funnel, and, acting upon the platinum dish, the water contained therein is quickly evaporated—in fact, in practice, I find that about forty-five minutes are amply sufficient time for the purpose. The dish and its contents being now well dried and weighed, the excess of weight over the first weighing represents the amount of solid residue. If it is further desirable to ascertain the amount of loss on ignition, we carefully burn off all carbonaceous matter, at a faint red heat. Moistened with ammonia carbonate, well dry, re-weigh, and the difference represents the volatile matter. This process, as previously stated, is of very little value in estimating the character of water.

Nitrates and Nitrites.

These are the skeletons of Frankland's sewage, and the mode by which their quantity is determined is exceedingly elegant.

We take a retort, and introduce 100 c.c. of water, to this add 60 c.c. of caustic soda solution free from nitrates, &c. The contents are now distilled until about 100 c.c. remain within the retort, and until the Neseler test is incapable of showing ammonia. Into the retort on cooling is added a small piece of the metal aluminium; it is closed with a cork, through which passes a small tube in the manner I now show you; it is filled with pieces of broken-up tobacco-pipe, or analogous matter,

and moistened with dilute chlorhydric acid. On standing for a few hours, the action is complete; the whole of the nitrates have been resolved into ammonia, and the ammonia, being distilled off, its quantity is determined by the Neseler test.

The process is so exceedingly delicate that it may be termed microscopic; indeed, a very small fraction of a grain of nitrates per gallon being readily ascertained. As to the relative value of the nitrates in a water in determining its quality, there is much difference in opinion, some chemists allowing that considerable quantities may be permitted without detriment, whereas Frankland would probably condemn a water if even a grain contained but half a grain of nitrates!

Ammonia.

The estimation of ammonia in water may fairly be considered to belong to the domain of microscopic chemistry when the Neseler test is employed.

I will first describe this test. We dissolve 50 grammes of potassic iodide in a little hot distilled water, placing the dish in a water-bath, and adding a strong solution of bichloride of mercury. We continue the mercury solution until a point is reached at which the red precipitate formed no longer dissolves on agitation. We then filter, and to the filtrate add 150 grammes of solid caustic soda in aqueous solution, and then dilute the whole to the volume of 1 litre. A further addition of about 5 c.c. of mercuric chloride imparts sensitiveness. Allowing all sediment to settle, and pouring off the clear fluid, we have the Neseler reagent such as I now show to you.

We take a water containing a trace of ammonia, and add the test, we obtain a yellowish brown colouration; and according to the intensity of this colour we calculate the amount of ammonia present.

We have now arrived at a stage in water analysis when we determine the presence of matters that are of prime importance in judging of quality; that is, the ammonia and the urea, and it is astonishing the minute difference in quantity which marks the point between waters that are foul and stinking, and waters that are good and wholesome.

The Albuminous Substances.

The most important of all the substances to be sought for in water intended for domestic purposes, is undoubtedly the nitrogenous organic or albuminous matter, and it is primarily by this test we judge of the antecedents of water, and the character and source of its contamination. It is simple and elegant.

To the remnants of the last experiment we add a strongly alkaline solution of potassic permanganate, and distil off not less than 200 c.c., and until Neseler ceases to show the presence of ammonia; for you must understand that the action of the permanganate is to cause most of the nitrogen from the organic nitrogenous matter—not nitrates—to be evolved as ammonia, and by estimating the quantity of this we have a fair idea of the quantity of organic matter on multiplying the result by ten.

The delicacy of these tests is truly wonderful, for we can directly estimate ammonia in water when its weight does not exceed the $\frac{1}{1000000}$ part of the water in which it is dissolved; and when we concentrate by evaporation or distillation, we increase its delicacy at least ten fold. We have now arrived at the end of our chemical examination of potable waters, and I will just point out a few works as the characteristics of really good water.

It should be clear, colourless, and transparent when viewed through a considerable stratum; it should be perfectly free from smell, both at the ordinary temperature and when heated to about 90° Fahr. It is well also if a little lime or baryta water be added previously to warming; its hardness must not be excessive, and above all other considerations, it must be free from sewage matters. This is of vital importance, for we have it on record for years past, and, in fact, there is not a summer or an autumn comes without hundreds of human beings that are carried away to an early grave from the use of water polluted with sewage; and excepting in the very vilest of waters, its presence cannot be detected, excepting by competent chemical examination, for it is an ascertained fact that waters which are clear and fair to look upon, that are beautiful and sparkling to the eye, may, nevertheless, be veritable poison-cups.

Before closing, something will possibly be expected upon the second phase of water—that is, sewage. Much has been said and written

upon this subject of late years; but very little has been accomplished towards solving the problem of what shall we do with our towns' sewage, as you are aware there are at this present moment three systems in vogue; viz.:—

Firstly, deodorisation with disinfectants, of which the ferric chloride process is a type. Secondly, the precipitation process, by which a portion of the mechanically-suspended matter in sewage is thrown down, of which the lime, the alum, the clay, and Sillar's processes may be given as types. In this class are attempted to be accomplished the objects of the first, and also to derive a profitable measure; and, I scarcely need remind you that they generally fail in the first object, and some of them in the second.

Thirdly, deodorisation disinfection, and a profit is endeavoured to be attained by the irrigation of land with sewage. This is a very ancient mode; indeed, it appears to be coeval with man. Like everything else, chemists and others differ as to whether this system of treatment is really efficient, some contending that the effluents of water flowing from off the land, after its functions are here ended, is not in a much better condition than when it was turned on. Now, this objection seems to me, after some years' consideration of the subject, observation in various parts of the world, and a trifle of experiment, to be a very futile objection; for it is evident, upon reflection, that a sufficiency of filtration through, and not over, porous soil will not be attended to; for, to take the absorbent power of soil will not be called in question, or what is the use of manure?—it must needs be washed away by the first smart shower. There are others—for example, the Rivers Pollution Commissioners—who contend, and I go with them a long way, that the water, as a rule, flows away remarkably pure, deprived of 90 per cent. of its impurities; the amount I give from memory—and this, you will observe, is in its practice, but I go further, and contend that 99 per cent. should be removed, being, however, fully aware that greater filtration is requisite,—not ordinary filtration, but that through land, nature's grand disinfectant.

There is, however, another objection to irrigation, viz., that a nuisance and probable danger are created by pitting sewage upon land in the first instance; that is, the sewage being in an active stage of decomposition, on arriving at the place of absorption by the soil, the gases of decomposition are diffused through the air at all points between the places of absorption and first contact with the open air. This I conceive to be a feasible objection, within certain limits, upon these grounds:—It is a condition of all matter to undergo decay and change through decomposition; that is, with sewage, especially animal sewage,—a medium between that which was waste and that which will become life. Under certain conditions, especially of temperature, this decomposition is actively promoted; and I concede that from some cause,—either of distance or of time,—a sufficiency of decomposition may have been attained to create a nuisance and a danger at the points of distribution of the sewage in question. Now, this is a condition I have long foreseen may probably arise, and have from some attention and a little experiment endeavoured to contribute my mite towards the knowledge tending to a solution of the problem.

I need not give you any details of all the schemes that entered my mind and were developed by experiment; suffice it that that which I found the most successful was chlorine, another was oxygen, but I will not now go into you with the former. This from limited experiment I find to answer the required purpose; it acts instantly upon the organic matter of sewage; upon that in a putrescent state, the gases are fixed or decomposed, ammoniacal salts are secured in the water, deodorisation and disinfection are so effected that after a lapse of even weeks not a trace of unpleasant odour is perceived, and when this sewage is freed from its noxiousness you cannot from mere external evidence tell it from the finest potable water.

The process I propose is something after this manner: chlorine to be generated by the perpetual regeneration scheme of Walter Weldon, in which chlorine is obtained from chlorhydric acid through the agency of manganic oxide, the same oxide being used over and over again for hundreds of times; so that the expense is reduced to that of the chlorhydric acid, the labour, and wear and tear of plant; and you are aware this acid is cheap enough, being a waste product of the alkali works, and can be purchased in a concentrated state at 40s. or 50s. per ton,—

a sufficiency, I believe, to treat millions of gallons of sewage.

I shall now conclude this exhaustive lecture,—that is, exhaustive of your patience and good-nature—not the subjects, for of these it is a mere outline,—and give you some idea of the value of sewage, from a calculation I made recently, based upon an average of fifty samples of Leicester sewage. The value of the ammonia alone in a year's flow, if placed upon the market and sold at current rates, would realise very nearly 40,000*l.*; and this substance, although by far the most valuable constituent, is not the only one, for we have the phosphates, and the alkalies and others; and you will agree with me that there could be no honour too great for the State to co-operate upon that man who should effectually solve this problem of utilisation of waste, although I do not believe it will ever fall to the lot of any individual to achieve undivided success, but will rather burst forth spontaneously from many minds, and will attain success, as have all the great events of modern days,—like our railways, our steamers, and our electricity.

FILTRATION OF TOWN SEWAGE.

THE new Royal Commission, appointed in 1868 to inquire into the best means of preventing the pollution of rivers, took up the subject where the former Commission had left it,—that is, after the Thames, the Lea, and the Aire and Calder basins had been reported upon, and have now issued their report on the Mersey and Ribble basins. They come to the same conclusions as the former Commission did in respect of the irrigation of land with town sewage being the best means of preventing the pollution of rivers with it, as well as being the most profitable in application; but they state the case in a different way to that in which the former Commission put it. They say that sewage may be sufficiently purified to be allowed to flow into any river or other watercourse, from which it is not intended to take water for domestic use, by filtration through sand or porous soil, as distinguished from the view that some persons take of irrigation, which is, that the sewage is purified by running over the surface of the land in a thin sheet, passing through the soil, and the elements to the plants, and storing the remainder in the top soil for the use of the next crop, or rather for the use of the crop first sown after re-ploughing the land; whereas the present Commissioners say that it is the filtration through a sufficient thickness of sand or porous soil that constitutes the efficiency of this method of utilising sewage; and that, therefore, its purification is insured by passing it through constructed filter-beds equally well as by passing it through the natural soil of the land. This they have ascertained by experiments with several kinds of soil, with sand, and with sand mixed with coarsely powdered chalk. The difference between filtration through constructed filter-beds and through the soil of the land is not one of efficiency of purification, but of the profitable application of the sewage, the former method being unremunerative, while the latter is remunerative. But it is consolatory to know that in places where land cannot be had for irrigation, the sewage may yet be sufficiently purified to be allowed to flow into rivers, although the value of the solid part of the sewage which is retained may not be of much value. The value of it will evidently depend on the quality with which it can be extracted in respect of the length of the time elapsing from its entry into the sewers to its extraction at the outfall. Where the gradients are considerable, and the mean distance of the outfall from the town is not very great, it may be arrested in a fresh state; and, mixed with street sweepings and other town refuse, may become of considerable value; while, where the gradients are slight, and the outfall at a greater mean distance from the town, it may become so far decomposed in its transit as to be of no value as a manure.

The Commissioners estimate that for a town where water-closets are in general use (therefore requiring a larger area than would be required where they are not so numerous), acres of filtering surface, and a depth of material of 6 ft., are sufficient for a population of 10,000. According to their experiments, something of this depends upon the nature of the soil or other material used for the filter-bed, the qualities of various soils for this purpose differing; for while soil procured from Dursley, in Gloucestershire, purified sewage at the rate

of 99 gallons per cubic yard per day, soil from Hambrook, near Bristol, did not satisfactorily purify more than 44 gallons per day per cubic yard. Again, soil from Beddington purified sewage of the same strength at the rate of 76 gallons per day, while that from Barking did not purify it at a greater rate than 38 gallons, or peat from Leyland Moss, near Preston, at a greater rate than 4 gallons per day per cubic yard of material.

Considering that "filtration" has already often been employed to purify sewage, and has always hitherto failed, it is rather startling to see it so confidently recommended, until we remember that both the methods of filtration that have failed for sewage also failed for water many years ago; that is to say, the horizontal method and the upward method, while, as soon as the late Mr. James Simpson rearranged the filter-beds of the Chelsea Waterworks at Thames Bank many years ago, and made the water to descend instead of ascend through the filtering medium, the question was then and thereafter settled as to whether water should be filtered upwards or downwards. Every engineer since that time—every engineer, that is to say, who has had the knowledge to perceive the difference between a true and scientific and a false and empirical method, or who has had the honesty to acknowledge that he was not the inventor of the practice he has adopted,—all these men have adopted the downward system of filtration of water. And so we find the Commissioners—or, shall we rather say, Dr. Frankland, one of them?—condemning the system of upward filtration now in practice at Ealing, and giving the reason why downward filtration is so effective in purifying sewage. The system at Ealing is to force the sewage upwards through a filtering medium constantly, thereby effecting no proper purification at all; but by making the sewage to descend for six or twelve hours through one bed, then shutting it off from that bed, or compartment, and turning it on to another for a like space of time, and so alternately, the descent of the sewage through the interstices of the material on either bed is followed by atmospheric air; the air, that is to say, that occupies these interstices before the sewage began to descend, and has been used up in oxidising and transforming, and therefore purifying the former quantity of sewage, is replenished after the descent of each quantity of sewage through each bed, and so by continual periodical renewals of the proper aeration of the filtering medium it becomes a constant purifier of the sewage; for, although this method of filtration in the case of water has mostly been called a mechanical one only, yet in the case of sewage filtration, the same method is said by the Commissioners to be both mechanical and chemical.

In order that there should be no ambiguity about what they recommend, and its attainment, they give a standard of impurity beyond which they think the water of sewage ought not to be admitted into rivers or other watercourses. They suggest that the following liquids be deemed polluting and inadmissible into any stream:—

"Any liquid containing, in suspension, more than 3 parts by weight of dry mineral matter, or 1 part by weight of dry organic matter in 100,000 parts by weight of the liquid.

"Any liquid containing, in solution, more than 2 parts by weight of organic carbon, or 3 parts by weight of organic nitrogen, in 100,000 parts by weight.

"Any liquid which shall exhibit by daylight a distinct colour when a stratum of it, 1 in. deep, is placed in a white porcelain or earthenware vessel."

So far the standard is applicable to any town. But the Commissioners, having before them the question primarily of the pollution of the rivers Mersey and Ribble, which traverse the manufacturing parts of the county of Lancashire, found it necessary for that district to prohibit, suggest, rather, that they should be prohibited,—many kinds of pollution peculiar to the manufactures of those parts, e.g.:—

"Any liquid which contains, in solution, in 100,000 parts by weight, more than 2 parts by weight of any metal except calcium, magnesium, potassium, and sodium.

"Any liquid which contains, whether in solution or suspension, in chemical combination or otherwise, more than .05 part by weight of arsenic.

"Any liquid which, after acidification with sulphuric acid, contains, in 100,000 parts by weight, more than 1 part by weight of free chlorine.

"Any liquid which contains, in 100,000 parts by weight, more than 1 part by weight of sul-

phur, in the condition either of sulphuretted hydrogen or of a soluble sulphuret.

"Any liquid possessing an acidity greater than that which is produced by adding 2 parts by weight of real muriatic acid to 1,000 parts by weight of distilled water.

"Any liquid possessing an alkalinity greater than that produced by adding one part by weight of dry caustic soda to 1,000 parts by weight of distilled water."

The opinion of the former Commission was that sewage could not be filtered. "As applied to sewage, disinfectants do not disinfect, and filter-beds do not filter," they said. Sewage applied constantly to a filter-bed on the upward system does not purify sewage continually, certainly; and if that was the system meant to be understood, the former Commission were clearly right in their statement, but on the downward system the case is different. Any one who remembers the condition of the Thames when the Lambeth Company took their water from a point of the river near Hungerford Bridge, and when the Chelsea Company took their supply from Thames Bank, may well compare the water then taken from the river for the supply of a large part of London with the town sewage of to-day. The reports of the engineers were constantly that the water was "turbid;" but that word, as now used sometimes to define the condition of the Thames water, conveys no idea of the state of the water at that time. In comparison with the turbidity now sometimes said to exist, it might be called pea-soup, or sludgy, and yet this very foul water was passed through filter-beds on the banks of the river, after subsidence in reservoirs, and transformed into the brightest and most pellucid water, as drawn from the filtered water-well. No doubt the surface of the filter-beds often required cleaning; the mud deposited soon stopped up the pores of the sand so that no more water would pass, and this was the cause of frequent shutting off and turning on of the water, may have been the cause, as illustrated by the view the present Commission takes of the subject, why these filter-beds were so perfect in action under such difficult circumstances; the air filling the interstices of the filtering medium—sand and gravel—after the mud was scraped from the surface of the sand, was replenished at short intervals, and so kept the filter-bed continually perfect.

Manchester being within the watershed of the river basin inquired into by the Commission, it became necessary for them to institute an inquiry into the merits of the privy and ash-pit system, as against the water-closet system, especially as that city is the great stronghold of this first-named system.

Agreeing with every other impartial inquiry into this subject, the present Commission condemn it. They illustrate the case in a remarkable way. They suppose all dwelling-houses, warehouses, &c., to be removed, and only the privies left—nearly 60,000 of them in Manchester and Salford—rows and streets, and crowds of them—scattered about almost as thickly in places as the heaps of manure upon a field that has just received a dressing from the dung-cart—each heap here, however, no more bare-lord once a year, but a constant collection and continual soaking of filth, which has for years been polluting every corner to which air or water could have access. *In this the site on which to build a healthy town? Would it not be better to sweep this filth away, to drain and aerate, and, if possible, to sweeten this land before a single dwelling-house should be built?*

On the great question of establishing a River Conservancy Board, the present Commissioners agree with the recommendations of the former Commission, to the effect that it is highly desirable that such a Board should be established for every river basin, but on the secondary question of how and of whom it should be constituted, the chairman, Sir W. Denison, does not agree with his colleagues, Dr. Frankland and Mr. John Chalmers Morton, and on that subject they give separate reports. The chairman advises a parochial system; that the officers of such parishes as the stream flows through should be the persons responsible for the cleansing of the river flowing through their respective districts, but, anticipating abuse of the powers placed in their hands, he recommends that they be made sufficiently responsible to the general government to enable the latter to check or prevent any such abuse, or to notice and reprove, and even to punish, all negligence or unfairness in the mode of action of the former. The Initiation

of action is to be the complaint of neighbour against the conduct of neighbour.

Let us take a supposititious case, and inquire how this would be likely to work in practice. Suppose two of the uppermost mills or towns on a stream to use the boundary of the district with satisfaction to themselves, but that one or both of them foul it so as to be unsatisfactory to the third person or town, the one below them. Of whom is the third party to complain? And of course, the difficulty is increased if three or more parties are satisfied, and the fourth or fifth complains. The boundary of the district over which each parochial Board is to have jurisdiction being coincident with that of the parish, how are the officers of the parish injured to determine who above them has caused the injury? If all are complained against, who shall determine the degree in which each has contributed to the pollution of the river?

Dr. Frankland and Mr. Morton recommend that, inasmuch as there exist at present no local bodies competent to deal with questions connected with efficient river conservancy, capable of detecting pollutions and enforcing remedies, it will be necessary to call into action an authority possessing greater powers than the powers that these of the existing corporate bodies or local boards. The duties of this authority would be of two distinct kinds: the one would be those of a river police, employed in the detection of offences, and in obtaining the conviction of offenders; the other would include the investigation of, and action upon, various causes connected with the river, either by towns or individuals, such as schemes for water supply and for the defecation, filtration, or utilisation of sewage and other polluting matters, while local boards could obtain information on these points only from persons capable of investigating them. Nevertheless, under the second scheme, the duties of the central authority, the co-operation of the local corporations would be required for the efficient discharge of them. Indeed, if guided and assisted by a properly qualified central court, the present local boards would be quite competent to meet all local difficulties and to supply all local wants. A central authority would not extinguish the corporations and local boards at present existing in the river basins. It would, the Commissioners believe, materially promote the energy of local action by removing the obstacles which at present hamper it, and by giving a prompt decision to the questions which it has to solve.

SOMETHING ABOUT HIGHGATE.

MR. WILLIAM HOWITT, the author of many delightful works, has given, in his recent book, reviewed in this column, a very first appearance, particulars respecting Highgate. From the top of the house he occupied there he could see the vast mass of all-devouring London spreading itself and ever increasing on all sides. Long after the Norman Conquest all this was the quiet Forest of Middlesex; for Fitz Stephen (c. 1175) thus describes its suburbs—

"There are cornfields, pasture, and delightful meadows, intermixed with pleasant streams, on which stands many a mill, whose clack is grateful to the ear. Beyond them a forest extends itself, beautiful with woods and groves, and full of the lairs and covert of beasts and game, stags, bucks, boars, and wild birds. These wild beasts were probably buffaloes, or like the beasts of Andalusia, in Spain, which, I presume, are small." They were more probably like the celebrated cattle at Chartley and Chillingham (Northumberland). The forest was full of yew, which supplied the bows for the warriors of Cressy and Agincourt. It was disforested in 1218, in the reign of Henry III. At this time we must remember, that the whole population of England was only about 2,150,000. In 1377 London only had 35,000 people. Henry VIII. made a proclamation that as he was "desirous to have the game of hare, partridge, pheasant, and baren preserved in and about his honor, at his Palace of Westminster, for his own delectation and pastime; that is to say, from his said Palace of Westminster to St. Giles-in-the-Fields, and from thence to Islington, to our Lady of the Oaks, to Highgate, to Hornsey Park, to Hamstead Heath, and from thence to the said Palace of Westminster, to be preserved for his own sport, pleasure, and recreation," &c.

Queen Elizabeth hunted in this preserve, and took up her quarters in Canonbury Tower. The residence of Sir Walter Raleigh still remains as the "Pied Bull" public house, Islington, not far from this tower. At the latter end of the reign of Elizabeth the population of England was only about 5,000,000, and of London about 140,000. The Queen was so afraid of its increase that she ordered no more houses to be built. The Statute did the same, but to no purpose. In 1625 there were only twenty hackney coaches in London; but Charles I. disliked them, because they obstructed the streets, and rendered them dangerous to his Majesty, his beloved consort, and the nobility. Very soon we shall see London increasing at the rate of 500,000 every ten years, an amount of population which it did not reach from the Conquest till the end of the seventeenth century.

Highgate is situated on a hill 400 ft. above the level of the sea, and for a long time was a mere hamlet of houses scattered here and there amid the forests. It was not till the fourteenth century that the Bishop of London allowed a highway to be cut through his park and woods of Harringhay (the hare-ingle-hay, or meadow of the hare). A piece of the forest was sold to toll takers, and the place is said to have been called Highgate from this gate; but what was the name of the place before that time is not known. The bishopric of London had extensive woods and demesnes beyond this gate reaching to the gate of Hamstead Heath, now the Spaniards' Tavern, to Finchley, where to call the church a palace.

The chapel of Highgate which occupied the site of a hermit's cell, was granted by Bishop Grindal, afterwards Archbishop of Canterbury, in 1565, to a new grammar-school, erected and endowed the year before by Sir Roger Cholmeley, late lord chief justice. This was pulled down in 1705, and the church and churchyard were part of the village. Among the tombs, however, was that of Coleridge, the poet and philosopher. The church was built in 1832, at a cost of 10,000l., in the parish of St. Pancras; but Highgate was soon afterwards made a district of itself.

An unfortunate Richard II. was conveyed through Highgate, in 1398, on his way from the North, by his hangy rival, Bolingbroke, hooted by the rabble. In 1461, Thomas Beaufort, baron of the Exchequer, was beheaded by the insurgents in Highgate. In 1745 the London train-bands marched through Highgate to encamp on Finchley Common, to defend the metropolis against the Charles and Charles. Mr. Howitt remarks that he has seen a man, then 112 years old, who, as a boy, witnessed the battles of Preston Pans and Culloden. On West Hill is the Fox and Crown Tavern. Sixteen days after our Queen came to the throne, she was descending the hill with her mother, the Dowager Queen, when the horse took fright and dashed down the hill. The lady, Mr. Turner, succeeded in stopping them; and if he had not done so, there would probably have been a change in the succession to the throne. Turner was allowed to place the royal arms over his door, and received a handsome present.

Coleridge settled at Highgate, in the house of Mr. James Gillman, surgeon, about 1800. At an early period he had used opium, and could not shake off that unhappy bondage. His physical strength gave way, and his mind was unstrung. "Here," as Carlyle says, "he sat looking down on London and its smoke-tamill, like a sage escaped from the insanity of life's mass, retracing towards him the thoughts of an innumerable brave souls still engaged there,—heavy-laden, high aspiring, and surely much-suffering man." During this time he continued his literary work, and was visited by many of the chief literary men of the day. He died July 25, 1834, aged 61.

Coleridge bequeathed the sculptor of the "Beseeching Girl," resides at Highgate. His sculptures of "Love Triumphant," and "Death of Virginia," executed for Mr. Westworth Beaumont, place him in a high rank in the artistic world. His son is a young sculptor of promise. In the old coaching days, travellers for the north stopped at Highgate, and at whichever of the nineteen public-houses it might be, "out came the horses, fired on a pole, and the passengers were sworn to eat no brown bread when they could get white, unless they liked it better, and not to kiss the maid when they could kiss the mistress, unless they liked her better," and a lot of other nonsense. This probably relates to the old passenger-toll levied on horned cattle, and gathered

by some park-keeper, who carried a staff, with horns to show his authority.

At Fitzroy Park, an outskirt of Highgate, Dr. Southwood Smith lived, a very modest and clever man of science. He was a physician to the London Fever Hospital, and wrote a valuable "Treatise on Fever," and "Animal Physiology," for the Society for the Diffusion of Useful Knowledge. In 1837, he was appointed by Government to inquire into the state of the poor, and many sanitary reforms resulted from his investigations. Dr. Smith died at Florence in 1871, and was buried in the Protestant cemetery there.

Highgate has retained more of its rural character than any other village in the suburbs of London. It has its old buildings, elm and lime tree avenue, and around stretch fields and hills. The house and estate of Caen Wood are the finest feature of the immediate vicinity of the village. The house, a large mass of red, of yellow stone, and was erected in the style of the reign of George III.; Robert Adam was the architect, and he also built Lenton House and Gosford House. The rooms in Caen Wood House are lofty and convenient. The park and grounds are so arranged, that one has all the sylvan excitement of a forest, and the convenience of miles in extent, London, you round the park, which contains fine beeches and cedars of Lebanon. Mr. Howitt says a custom is kept up here which smacks of the old feudal times. Every morning, when the night watchman goes off duty, at six o'clock, he fires a gun, and immediately three long winds are given to the horn of the watchman, which means that he is to their employment. The horn is blown again at breakfast and dinner hours, and at six in the evening for their dismissal.

The confederates of Guy Fawkes fled into Caen Wood, on the failure of the Gunpowder Plot. The hill at some distance from it is still called "Traitors' Hill," and the church is said to be waiting for the explosion, to assure them that the plot was successful. William Paterson, the founder of the Bank of England, lived near here; he was a Scotchman, and very clever. He collected the springs of Caen Wood into reservoirs, and supplied Hamstead and Kentish Town, till the new supply was established.

Caen Wood House (or Kenwood House, as it is now generally called), in 1661, was the property of a Mr. John Bill, who married a Lady Pelham, supposed to be the widow of Sir Thomas Pelham, and a daughter of Sir Henry Vane. It afterwards became the property of the Earl of Bute, who married the only daughter of the celebrated Lady Mary Wortley Montagu. The Earl sold the estate in 1755 to Lord Mansfield, who, on his death, devised it to go with the title to his nephew, Lord Stormont, whose descendants now possess it. Mr. Howitt gives a capital sketch of the life of William Murray, fourth son of Viscount Stormont, afterwards Lord Mansfield, who was a great lawyer, and a great man, and was very poor, so that they lived chiefly on oatmeal, porridge, and salmon. Willie was sent to the grammar-school of Perth. He rode on his pony from Scoon to London, being then fourteen years of age, with a bag of oatmeal hung from his neck. He entered Westminster school, and gained a good deal of learning. He played at the bag and a silver-toned voice won him many admirers. In 1742 he became Solicitor-general, and eventually Lord Chief Justice of the King's Bench, and Chancellor of the Exchequer, with the title of Earl of Mansfield. He first decided that no slave can maintain a slave in England. He was, however, against the slave trade, and was the first to practice of pressing seamen. Lord Campbell tells us he had no heart; all he did might have been done from a refined calculating selfishness, with a view to his own credit. He had no warmth of affection; he formed no friendships; and he neither made exertions nor submitted to sacrifices for the sake of others. ("Lives of the Chief Justices," ii., 576.)

Oliver Cromwell built Cromwell House, a solid red-brick mansion, about the year 1630; but he is thought never to have made more than an occasional visit to it. Prickett, in his "History of Highgate," says, "Cromwell's House was evidently built and internally ornamented in accordance with the taste of its military occupant. The staircase, which is of handsome proportions, is richly decorated with caken carved figures, supposed to be of persons in the general's army, in their costume; and the balustrade filled in with device emblematical of warfare. On the ceiling of the drawing-room are the arms of General Ireton: this and the other ceilings of

* "The Northern Heights of London; or, Historical Associations of Hamstead, Highgate, &c." By William Howitt. London: Longmans, 1869.

the principal apartments are enriched in conformity with the fashion of those days. The proportions of the noble rooms, as well as the brickwork in front, well show the notice and study of the antiquary and the architect." The figures here mentioned stand on the posts of the staircase.

Andrew Marvell, the patriot, had a house at Higgate. He was the son of a clergyman at Hull. He became secretary of the Cavalier and assistant Latin secretary, with Milton, to Cromwell; and in 1658 became Member of Parliament for Hull. He mercifully exposed kings and bishops. Charles II. issued a proclamation offering a high reward for his apprehension; and he retired to Hull, where he died soon afterwards, in his fifty-eighth year. Marvell was the first to discern and proclaim the magnificent genius of "Paradise Lost."

Not far from Cromwell House once stood Arundel House, the suburban residence of the Earls of Arundel. Norden mentions it in his "Survey of Middlesex," in 1596. The King slept here in 1624. Two interesting historical events took place here—first, the death of Arabella Stuart, the daughter of James I., and the death of the Chancellor Bacon, about fifteen years afterwards. Arabella Stuart was descended from Henry VII. Had James I. had no children, she would have been the next heir to the English throne. Elizabeth put her in prison to prevent her marrying; and, of course, was disposed more favourably to her towards her. William Seymour, second son of Lord Beauchamp, eldest son of the Earl of Hertford, fell in love with Arabella, and they were secretly married. James was furious when he heard of it, and sent the husband to the Tower and the wife to Lambeth. He then ordered her to be sent to the Bishop of Durham, who was only prevented by a fever coming on during the journey, and was brought back to Higgate, to Arundel House. Here she planned an escape for herself and husband, who was in the Tower, and she succeeded in getting away disguised in men's clothes, and got on board a French boat, which was waiting for her. Seymour escaped from the Tower, disguised as a physician, but the boat containing his wife had put to sea, and he engaged with a captain of a collier to carry him to Flanders. His escape was soon discovered, and Arabella was taken, but Seymour escaped. She was taken to the Tower, and soon went out of her mind, and died about a year afterwards. Her husband was permitted to return after his wife's death, became Marquis of Hertford, and fought for the Crown in the civil war, though he had married the sister of the Earl of Essex, the Parliamentary general, and Charles II. restored to him the title of the Duke of Somerset, which had been forfeited by his great-grandfather the Protector.

In 1626 the man who revolutionised philosophy and laid the foundation of all our modern progress in science, died here. For five years he had been a fallen and disgraced man, banished from court, and living in retirement. We owe him our gratitude for his "Novum Organum," but he certainly took bribes as a judge, which does not give us a very high idea of his morality. He kept great state, and his ostentation of liberality was somewhat pitiful. On his trial he delivered in a list of bribes taken by him on twenty-eight cases, and those amounted to 10,000*l.*, equal to 60,000*l.* of our money. He got killed when trying an ass for a horse, by his preserving bodies in snow, and then slept in a damp bed, and died at Arundel House, in the sixty-sixth year of his age.

On descending the hill not far from the Archway Tavern, is a massive stone, bearing this inscription:—

SIR RICHARD WHITTINGTON, LORD MAYOR OF LONDON.
1367 Edward III.
1369 Henry IV.
1419 Henry V.

This stone takes the place of one at which Sir Richard, when riding here, having dismounted and walked up the hill, mounted again. It is not our intention to venture to disprove the old story, but, at any rate, Whittington was a great man in his day. In the reign of Edward III. he made the king a present of 10,000*l.*—a vast sum in those days—towards the expenses of the war with France. Stone says that he died in wool, leather, and pearls. He entertained Henry V. and his queen at Guildhall; and the king having praised the fire made of choice woods and spices, said he would make it still more agreeable to his Majesty. He then threw into it the king's bonds

for 10,000 marks due to the Mercers' Company, 12,500 to the Chamber of London, 12,000 to the Grocers; to the Staplers, Goldsmiths, Haberdashers, Vintners, Brewers, and Bakers, 3,000 marks each,—of course an immense sum. Whittington built a church in Vinty Ward, almshouses, and a college; rebuilt Newgate, repaired Guildhall, and did many other useful works.

Mr. David Williams, founder of the Literary Fund, and minister of the Presbyterian Chapel, lived at Higgate. He was born near Cardigan in 1738, and was educated at a college of Dissenters at Carmarthen. He became minister of a small congregation at Frome, in Somersetshire, but soon removed to a more important charge at Exeter. The elder members of his congregation objected to his entering into social pleasures, but, as he happened to know something of their own private character, they agreed that if he left Exeter he should take the office of pastor at Higgate. In 1770 he appeared as the defender of Moscop against Garrick, and wrote the actor a letter, which is now in the Museum at Exeter. Williams detected anything like intolerance or bigotry. He retired to Chelsea after a time, and during his residence there he gave an asylum to Dr. Franklin at a period when there was great excitement against him. Mr. Williams proposed a scheme for universal uniformity of worship, and delivered a set of lectures on the Christian principle in the church in Margaret-street, Cavendish-square. In 1782 he published a work called "Letters on Political Liberty," which was translated into French, and procured him an invitation to Paris to assist in drawing up a constitution for France, but his advice was not taken, and the Revolution followed.

J. P., Jan.

GREAT PRIZES FOR ART WORKMANSHIP.

THE Council of the Society of Arts having in view the International Exhibitions about to take place under the management of the Royal Commissioners for the Exhibition of 1851, think it well to suspend for a time the former bitherto adopted in offering prizes for art-workmanship, believing that the change is likely to be beneficial to the object the council have at heart, viz., to see the art-workmen of the United Kingdom occupying a good position in the coming International Exhibition in comparison with those of other countries.

With this view, the council have decided upon offering a series of rewards for special excellence on the part of all concurring in the satisfactory production of works of industry of the highest character. They consider that the most judicious course they can adopt for the encouragement of the workmen, is by offering to manufacturers the highest distinctions they have in their power to confer, and to workmen liberal money premiums. They desire to obtain, from those who may be willing to compete for the prizes they offer, specimens of art-manufacture, which will have to be sent to the Society's rooms by the 14th of January, 1871.

These will be immediately judged upon their merits, and the premiums enumerated below will be awarded. An endeavour will be made to effect arrangements by means of which every object receiving a premium, or selected for the distinction of being exhibited, will be placed in the coming International Exhibition as a contribution on the part of the Society of Arts, showing the results of recent efforts made to improve art-workmanship in this country.

The specimens of manufacture sent in, in competition for the above rewards and premiums, will have affixed to them the name of the designer and of the workman, in each specific branch of industry involved in the execution of the work. Every workman will be eligible to receive money premiums proportionate to his merits, and to the degree in which he may have contributed to the successful results of the whole; while the manufacturer may receive the gold medal of the Society.

The Society hope that they may receive objects enabling the judges to award the Society's gold medal to manufacturers; and the Society's silver medal to manufacturers or designers—accompanied in the latter case, if the circumstances appear to call for it, with money premiums; and to the art-workmen, money premiums from 3*l.* 20*s.*, and to the extent in the whole of 500*l.*

These works may obviously include specimens not only of the taste of the designer, but of the skill of the carver, inlayer, metal-worker, chaser, bronzist, engraver, china-painter, die-sinker,

cameo-cutter, glass-worker, enameller, mosaicist, and other art-workmen, either separately or in any arranged combination.

It is thought better not to define too closely the objects of manufacture likely to result from any such combination; but, by way of illustration of what the Society hopes to receive, may be mentioned the following:—

A cabinet with glass doors, for the exhibition of articles of vertu of the highest character.
A toilet-glass suited for the boudoir of a lady of rank.
Any combination of goldsmith's and silversmith's work, with elaborate glass fittings, for the centre of a dining-table.

A chamber-organ, piano, or other musical instrument, combining enamel, ivory, marquetry, and metal work.
A circlet or other personal jewel, encrusted with enamel, chasing, &c.

A case for a Bible, presentation volume, or any rare book, involving carving, inlaying, marquetry, and precious metal work.

No object involving combined labour for its production will be eligible for reward, unless accompanied with the names of all those engaged in its production, to the most meritorious of whom—whether their works may be exhibited in the rooms of the Society, or in the International Exhibition—every effort will be made by the Council to give publicity, and attract attention.

Such combinations between the manufacturer, designer, and various workmen, will not preclude the award of premiums to individual workmen producing any object single-handed.

By way of illustration of the class of objects likely to be so produced, and to be highly regarded by the Society, the following may be mentioned:—

A drinking-cup.

A centre-piece for flowers in blown or twisted glass, decorated with filigree, or enamel colours, or by lacunose work.

A candlestick in wrought iron, brass, bronze, or other metal, with inlay, enamelling, damascening, &c.

A carved or modelled clock-case.
A carved or modelled chimney-piece.

The Council will far more highly esteem grandeur and beauty of style, invention, or elegant simplicity, than they will richness or minute elaboration.

We earnestly commend these proposals alike to manufacturers, designers, and workmen.

KENWOOD TOWER, HIGGATE.

KENWOOD TOWER, now being erected for Mr. Edward Brooke, will have the external walls faced with Longhorough red bricks and rubbed Reading red brick quoins, all the dressings of the windows and other stonework (being of Doulton freestone). The chimney-shafts will be of various patterns, and will be up in ornamental bricks, supplied by Gamlin, of Cassey. The roofs are to be covered with ornamental red and dark grey tiles. The dining-room will have a moulded and carved ceiling in wainscot; also dado doors and window jambs, all of wainscot framing, moulded on the solid. The floor parquetry; the chimneypiece will be modelled and carved with various woods and marbles; it will be the whole height of the room, and worked into the curve of the ceiling. The principal staircase is to be of wainscot, carved, of Elizabethan design, with an open-timbered ornamental roof, coloured. The billiard-room, ante-hall, and principal hall will be fitted up with rich parquetry in similar design to the dining-room. The upper portion of the windows in the ground-floor rooms is to be filled with stained glass, supplied by Heaton, Butler, & Baynes, the subjects to be suitable to each room. There will be a stained-glass window, too, on the principal staircase, filled up with the armorial bearings of the Brooke family in the hall, in the stained windows, with subjects from well-known fables. Polished marble columns and carved capitals are used inside, both in staircase, hall, and drawing-room. The conservatory and vineyard will have an entrance from the dining-room.

Mr. E. M. Ward's picture, "Edge Jeffreys," and Mr. H. B. Brown's picture, "Mr. Brown, before the present Royal Academy Exhibition," will hang in the dining-room here.

The contract is taken by Messrs. Jackson & Shaw for 10,126*l.*, exclusive of the conservatories, chimneypieces, and stoves. The foundations have been put in by Messrs. Sharpening & Cole, who have also erected all the other conservative structures in various parts of the grounds. The clerk of works is Mr. G. Simonds. The whole of the works are being carried out from the designs and under the superintendence of Messrs. E. Salomons & J. P. Jones, architects.



KENWOOD TOWER, HIGGATE.—PLAN OF GROUND FLOOR.



KENWOOD TOWER, HIGHGATE.—Messrs. SALOMONS & JOSES, ARCHITECTS.

RICHMOND, SURREY.

A COMMODIOUS chapel for the Baptist Congregation has just been completed and opened in Richmond. The building stands on a prominent freshhold site near the railway station, and is constructed of corrugated iron, resting on a base of brickwork about 6 ft. above the ground level. It is approached in front by a flight of Portland steps, through an open deal porch, over which is a circular stained glass window. The pewing is also in deal. The pulpit and reading-desk are of oak, on a raised platform, at the rear of which is the open baptistery, with a vestry on each side. The size of the main building is about 80 ft. by 50 ft., and accommodates 700 persons. The height from level of floor or top of brickwork to the apex is 35 ft., with a bell-turret in the south-east corner 60 ft. high. The roof is boarded diagonally, and secured by perforated T-iron principals supported on iron columns, which divide the space into nave and aisles. It is lighted, artificially, by three crown pendants. The ironwork throughout has been painted with Calley's Torbay iron paint, which is said not to be liable to be affected by the action of the weather. The contract was taken by Mr. Giles Bonsett. Total cost, £1,700. The work has been carried out under the personal superintendence of Mr. Albert Bridgman, architect. Sufficient space has also been secured for Sunday and day schools, which will shortly be erected.

AN ARCHITECT'S ACCOUNT OF THE GIANT'S CAUSEWAY.

THE curious and wonderful assemblage of basaltic pillars on the coast of the county of Antrim, Ireland, known as the "Giant's Causeway," has been a thousand times described by artist, essayist, journalist, traveller, and poet. It has been a meet subject for the whole aristocratic and literary phalanx of Europe and America. Topographers have written, geologists have hammered it, painters limned it, poets apostrophised it, and Vandal excursionists hid fair, if not stopped for the next generation, to trample it down to the sea level, or pick it to pieces, to satisfy an uncontrollable and unwholesome passion of carrying home "a bit of the Giant's Causeway" to ornament their chimney-boards. Amongst all the sightseers who visited the Causeway, we have never known but one architect who visited it that described it. As this architect's account has not met the eyes of many, and as it is to our thinking one of the most interesting descriptions that have been given, we will present it to the readers of the *Builder*. Though written many years ago, it has lost nothing of its interest. The writer was an architect of eminence in the sister kingdom, who held during his lifetime a conspicuous place in his profession, and lived to find a successful rival in the person of his own son. R. Morrison, architect, for he was the writer, enjoyed good practice in Ireland. One of the names in the sister island has impressed his character, as our readers know, upon his works.

Our architect thus describes the Giant's Causeway:—"The sea cliffs contiguous to the Causeway are particularly high. You approach it by a narrow path, or a long dreary precipice almost impassable. Every image which presents itself has something grand and magnificent. Above you, the impending rocks to a timorous fancy threaten instant ruin; around you the sea presents immensely, unless where the shore of Scotland gives the idea of a world set at a proper distance for contemplation; and below you, the dreadful precipice produces an effect of sublimity. The Causeway is a low band, extending from the head of the cliffs into the sea like a mole, consisting of a great number of polygonal cylinders or pillars, so closely united that the edge of a knife cannot be inserted between their adjacent sides. At the first view this head did not appear to me so grand as I expected from the description. I had seen of it; but when I came to walk on it, and to consider its plan and situation more attentively, it appeared a stupendous production of nature, extending from the bottom of the cliffs into the sea, but to what distance has never been ascertained. At low water the length of it appears to be 600 ft.; its breadth, in one place, 240 ft., in the narrowest, 120 ft.; it is very narrow equal likewise in its height. In some places it is 36 ft. high from the level of the strand, and only 15 ft. in other places. The pillars of which the causeway is formed stand most of them per-

pendicular to the plane of the horizon, yet the contour of them is so adapted that there is no vacuity between them. I could not discern whether they ran underground like a quarry or not. Some of them are very long, others short, and some for a large space are broken off at an equal height, so that their tops make an even plane surface. Many of them are imperfect, crooked, and irregular; others entire, uniform, and handsome, and these of different shapes and sizes.

I found them almost pentagonal or hexagonal, a few excepted, of seven sides, and many more pentagons than hexagons, but they were all irregular, for none that I could observe had sides equal in length. These pillars are some of them 15 in. and some 18 in., and some of them 3 ft. diameter. None of them are one entire stone, but every pillar consists of several joints or pieces, as I may call them, and the whole are joined as close as it is possible for one stone to lie upon another, not jointing with plain flat surfaces. The upper ends of many of the pillars are convex, the lower ends convex, the prominences of which are nearly quarters of spheres, with rims round them. The length of each of these pieces which compose the pillars is 6 in., some 12 in., 18 in., and 2 ft., and easily separated, though so united in all appearance. When I parted these joints, and viewed the concave and convex superficies, they appeared very smooth, as are also the sides of the pillars which touch one another, being of a whitish freestone colour, but a much finer and closer grit. When I broke some pieces of them, the inside appeared like blackish iron grey, somewhat like the best limestone marble before it is polished, but of an extraordinary close, and smooth compact texture; their grit or grain so very even and fine that it hardly appears, but, where the stone is nearly broken, there it shows itself on its surface like a very minute, small glistening sand, thickly interspersed with the rest of the solid, and this (by reason of its being so closely united together) has the appearance of a gravel than most other kinds of stone. I must observe that, in my opinion, the curiosity of this place is much increased by the stones of which the pillars are composed being the irregular rather than the regular figures of geometry, as it is much more difficult to suit the sides of polygons together than circles, and, in fact, being done easily by putting together two triangles equal to the square. I perceive in some of the stones the scheme of the 11th, 12th, 13th, 14th, and 15th propositions of the Fourth Book of Euclid, wherein an ordinate pentagon was inscribed; about it was circumscribed a circle; in another I observed a cylinder composed of three circles, and a cone, which was most surprising than the pile of rocks here composed of a vast number of polygons; the external angles of each exactly suiting that made by the adjacent figures, and some rising like a flight of stairs to a considerable height.

At a small distance from the Causeway you discover in the impending cliff to the south-east, one large pile of those polygonal figures, so situated and united as to appear really to be what it is commonly called the Giant's Loom or Organ, as in perspective it resembles either. Another on the summit of the precipice has so much the resemblance of the chimneys of a house that the *Lia*, some ship of the invincible armada, sailing off for a town, in the approach to it split on the rocks.

From observing at low water the rocks stretching a great length into the sea, and that there are similar ones on the opposite coast of Scotland, some have been led absurdly to imagine that there was formerly a design of uniting the kingdoms by means of a causeway. This is very preposterous and false. Others, from observing rocks in the precipice or cliff similar to those of the Causeway, have imagined that the sea, by undermining, has brought down these; but there is really no foundation for the remark, there not being any great similarity between the stone in the Causeway and precipice, and the pavement of the Causeway extends along the shore, where it could not have fallen from the precipice; nor can we, with any degree of reason, attribute to a chance fall a phenomenon so regular, so perfectly connected, and so extensive. Others, again, with a superior display of penetration, endeavour to account for the figures of the stone from the crystallisation of salts. This they may suppose, on the doctrine of the Abbé Nollet, who, in his lectures on experimental philosophy, says that 'every salt when crystallised generally affects a figure which is proper to itself, and

which probably depends on the figures belonging to its smallest part. Sea salt, for example, forms amber, saltpetre needles, sugar globules, &c.

For my own part, I think it most reasonable to imagine that nature, which pursues infinite diversity of plans, forming some things for the use, others for the pleasure, of mankind, has left this and such like curiosities as perpetrating subjects for our admiration, that, from observing the wonders of the visible creation, we might be led to sublime contemplation of the invisible Creator, and, as Democritus philosophised amongst the rocks of Abdera, were a man of reflection to confine his whole observation to this Causeway, and afterwards to consider it, he would and himself surrounded by profound philosophy, and the wisdom and power. Indeed, all the works of human art must cease to attract if compared with this. Not the army of Xerxes, with an Archimedes to direct them, could form anything so wonderfully great, so uniformly various.

The usual attempts to explain this phenomenon appear to me very absurd. It had its name from the ignorant credulity of the unlettered, and superstitious vulgar causes, often of more absurd errors."

So ends the description given by an architect of a visit to the Giant's Causeway.

ON LIGHTNING RODS.

In a lecture printed in the *American Gaslight Journal*, an attempt is made by Dr. Baesbe, of Worcester, Mass., to show that lightning-rods constructed and erected according to the principles in vogue, tend at least as often as otherwise (the author says, often), to increase the danger.

The lecturer said, while observing effects of atmospheric electricity with reference to the construction of the lightning rod, my attention was called to the fact that a large majority of buildings struck by lightning had rods. Some of these houses and buildings were damaged, while others, in close proximity, without rods, escaped. In some instances buildings have stood half a century uninjured, but immediately after the application of rods, were struck by lightning. Such facts have done much to destroy confidence in rods, while on the other hand they call on us to answer to the question:—Are lightning-rods a safe failure? If not, what are their defects, causing so many accidents? My decided convictions prompt the answer: they are not a failure in principle, but have become so to a great extent by defective application.

Passing over points of minor importance, the leading defects of rods in general, and the chief causes of failure, may be said to be, first, no connection with the ground. The rod is usually run into the ground from 4 ft. to 6 ft., or until it is supposed to reach moist earth. This is a great mistake.

It is well known that clay, sand, and gravel are comparatively poor conductors, and the very limited surface which a common rod presents to them affords very inadequate means of relieving the rod.

In such cases the tip of the rod is often burned or fused, the glass insulators (if such are used), broken and thrown from their places, and frequently the ground where the rod enters more or less torn up.

When the rod is subjected to all the pressure it can bear, some slight causes often turn the balance of forces in favour of a lateral discharge; and this is often ascribed to the insufficient size of the rod, or to the form, or material, or mode of insulation, while the main cause of the failure of rods to perform their proper functions appears to be that, in nine cases out of ten, the lateral charge of the rod caused by the resistance of the earth.

In Worcester county over eighty cases have been reported in the use of a patent copper rod, in which evidence was left that the rod had been to severely charged. In a large majority the electricity leaves the rod as it is very near the earth. Often the effect is shown merely in tearing up the ground. Moreover, in the most severe cases I have observed, the rod is invariably found imperfectly connected with the ground; usually much oxidized, and sometimes extending not more than 2 ft. or 3 ft. into the earth.

Dr. Bashen's recommendation (by no means a new one), is that in all cases the rod should be connected with the water-pipes and gas pipes with which our large towns and cities are furnished; which, being good conductors and pre-

sending large surface, promptly diffuse the heaviest charge to the earth. Such pipes have, nevertheless, been struck by lightning and the joints destroyed, and persons have been injured by electricity from gas-burners, but when a proper connexion is made with a good pointed rod, and hence the charge gradually received, no possible harm can occur.

He also recommends another mode which is not uncommon; that is, connexion with a well, spring, or permanent stream, this being a general safe and reliable means. The rod should extend to some considerable depth into the water.

It is thought by some, he said, that metallic rods possess some power of protecting buildings from lightning, but experience shows that buildings with such roofing are sometimes struck, and probably as often as other buildings under similar circumstances, and therefore require the same means of protection. Good points should be attached to the chimneys or highest part of the house, and connected with the metallic roofing. It is not necessary for the rods to be extended over the roof, and they may run simply from the eaves or lower edge of the roof to the earth.

HOW IS THE DEATH-RATE KEPT UP?

SIR,—The *Builder* is full of lamentations on the subject of defective sanitary arrangements, polluted rivers, and such-like sanitary abominations, and look at the result of this state of things. It appears the weekly returns of the Registrar-General for the future are to include several large towns not hitherto inserted in that official report, and on examining statistically the effect of past sanitary arrangements, I drew the following deductions therefrom. If we are to judge of the health of towns by the death-rate, it is clear very little progress, if any, has been made in effective sanitary improvements, and I think her Majesty will have to appoint another Commission to examine into the cause, as in 1844; although it is rather early for the moral effect of the last searching inquiry to be lost already, and for history to repeat itself so soon—

	Estimated Population, 1840.	Per 1,000, 1840 to 1860.	Per 1,000, 1860 to 1870.	Health of Towns Report, 1869-70.
Per 1,000.	Per 1,000.	Per 1,000.	Per 1,000.	
Hull	25	27	28	—
Bradford	20	26	24	—
Liverpool	20	26	26	—
Sheffield	21	26	27	—
Birmingham	21	24	27	—
Leeds	20	25	27	—
Newcastle-on-Tyne	21	24	27	—
Bristol	24	23	31	—
Manchester	26	24	32	—
Salford	26	28	28	—

Thus it appears in the above list there is a slight increase in the death-rate of two towns (marked *) from 1840 to 1869, and in the other towns there is little, if any, change; so our labours for the last thirty years have produced very little effect. The new year has opened more disastrously. It is very self-evident, and well understood, that sanitary works, if efficiently properly carried out, do materially reduce the death-rate, as we have many towns that are cases in point; but it appears from some inexplicable causes our large towns do not profit by them to that extent that we ought to expect, and I think the excess of deaths should not be attributed to hat should be quite irrespective of the increase of population.

I am one of those sanguine enough to believe that it is possible, with proper sanitary works, and sanitary measures strictly enforced in towns, to reduce the death-rate to a minimum,—say not exceeding 2 per cent. of the population, and it is therefore perfectly clear, that our provincial authorities have now had more than a quarter of a century's fair and indulgent trial, and they have proved themselves wanting. The action of the Royal Commission now sitting might very well be directed to this important subject, so as to stimulate our slumbering town authorities as a temporary measure; and for a permanent improvement a Minister of Public Health should be at once appointed, with a skillful and energetic staff, who would frequently and periodically survey our dirty towns and the plague spots in them, and thus by these means remove the foul blot that now defaces our national escutcheon.

B. B.

St. Mary's, Exeter.—It is proposed to add a tower to St. Mary's Church, as a memorial of the late Bishop.

CHURCH-BUILDING NEWS.

Gouthurst.—The old church of this parish has, for some time past, been undergoing internal restoration, which will soon be finished. The proprietors of Bedbury and Cornwell, Mr. A. J. B. Crawford Hope and Mr. H. J. Gaspoin, are restoring the south chancel, at an expense of some 400*l.*, and there only remain the south aisle, as wide as the nave, and the north chapel, to complete the internal restoration. The church was filled with the highest of pews, and had the usual western gallery with small organ. Nearly all these have been removed. All the windows except the east have been decorated with millions and tracery. Three of these have been restored at the expense of Mr. R. Oakden, and three others by Mrs. Cramer Roberts, Mrs. S. W. Newington, and Miss Miller. A new pulpit, of oak, on a stone base, carved by Foreyth, was the gift of the late Mrs. Henry Lake, of Higgin, and the celebrated artist has been engaged to cost about 1,000*l.* The chancel has been restored by the Ecclesiastical Commissioners, two entirely new windows being inserted in the east and north walls. The east window is of coloured glass, executed by Messrs. Clayton & Bell. It consists of three lights and represents the subject of the "Crucifixion," the triplets being, in the northern light, are the "Three Marys standing by the Cross;" and in the southern light, "Joseph of Arimathea, Nicodemus, and the Centurion." The north window represents the "Supper at Bethany."

Loppington.—The re-opening of Loppington Church, near West, after its thorough restoration, has been celebrated. The interior of the edifice has been rebuilt, with the exception of the tower, the circular arches of which point to its Norman origin. It is a stone building, with freestone facings; and the high pews have been replaced by low-backed seats. It is also fitted up with a heating apparatus. The work has been carried out by Messrs. Benders & Durr, of Shrewsbury, from plans by Mr. E. Randall, of the same place. The work of restoration required the sum of 1,600*l.*, which has been raised, or nearly so, by public subscription. The restoration of the chancel has been done by Mr. Vaughan and Captain Dicken, at a cost of 300*l.*

Wendover.—The parish church here has been re-opened for divine service, after rebuilding, except a portion of the tower, which has been refaced. The new church is built on the old foundations, with the exception of the chancel, which has been extended. The church is cruciform in plan, and provides sitting accommodation for 350 persons. The walls are faced with Coffer glass, of light warm tint, with a margin of a greenish hue, by Messrs. Dox & Davies, of Shrewsbury, who have also filled the other window with stained glass. The subjects in the last window were specially chosen by the vicar, on account of the late Mr. Oliver's kindness to children, it being to the memory of that gentleman that the window has been erected. The subjects which the memorial window contains are, "Christ with the Doctors in the Temple," and "Our Saviour blessing little Children," with a canopy over each. Underneath the subjects is a base, which also forms a small canopy for the lily which is introduced at the bottom of the tower. The church will be warmed by an apparatus supplied by Mr. Dowdell, plumber, Shrewsbury. In excavating for a road around the church, the workmen met with some walling belonging to the original fabric. It was 2 yards thick, and appears to be of the date of 1216.

Wantage.—West Hanney Church, after restoration, has been formally re-opened by the Bishop of Oxford, the Dean of Loxford, and the vicar. The plans. The total estimate was 1,700*l.*, in which was included the porch over the principal entrance on the north side, where there is a Norman arch, and also the chancel. Sufficient funds not having been raised, the vicar was compelled to limit the work to about 1,100*l.* The chancel with stained glass, the choir stalls appropriated, and will seat 300 persons. Under the seats the floor is boarded, and the aisle is laid with Staffordshire tiles. An open-timbered roof, stained, covers the nave. The plans have been carried out by Messrs. Longmire & Burge, of London.

Badwinter.—The parish church of Badwinter has been re-consecrated, under its former dedication to St. Mary the Virgin, after having undergone a restoration in every part except the tower. The church has been enlarged by adding one bay to the nave, and therefore the chancel has been thrown forward. The architect was Mr. W. Newfield. The old square pews are replaced by plain deal benches. The chancel is elevated three steps above the nave, and is paved with tiles. The chancel stalls are of carved oak.

Elmsted Market.—At a meeting of the building committee appointed to carry out the erection of a new church at Elmsted, in the parish of Messrs. James Stannard & Co., of Leicester, were submitted for inspection, and accepted, the estimated cost of the church being something over 2,000*l.*

Barnesley.—The restoration of St. Mary's Church has been commenced. The designs for the alterations are furnished by Mr. Bodley, of London, architect; and the work, which is of an extensive character, including the entire remodelling of the interior of the church, and the opening out of the west window, which is to be filled with stained glass, in memory of the late Mr. J. S. Beckett, will occupy some time.

Kidderminster.—The plans for a new church is to be erected at Franche. Plans of a small structure have been prepared by Messrs. Martin & Chamberlain, of Birmingham, and the contract for the building has been taken by Mr. Thompson, of Park-lane.

Nether Denton.—The new church at Nether Denton has been consecrated by the Bishop of Carlisle, and the church is a fine specimen of the place of an old structure dedicated to St. Cuthbert. The new building is in the Early English style of the thirteenth century, and is calculated to accommodate 140 persons. It consists of a nave 45 ft. 6 in. in length, and 21 ft. broad; and a chancel, 26 ft. 3 in. by 17 ft. 6 in. in length, and 11 ft. 6 in. in width. The church is a harmonious, separated from the vestry by an oak tracery screen supporting a grille of ironwork glazed. The entrance is by a covered porch on the south side. The chancel is lighted by a triple lancet window, filled with stained glass, by Messrs. Gibbs, of London, representing the "Last Supper," and the "Crucifixion." The tower is plain and unadorned. The south and north sides are perforated with a continuous arcade of single lancet windows, one or two of which are filled with stained glass. The west end is lighted by two large lancet windows. The walls are double, with a space between them, the inner part being of chiselled and square stones, and the outer of rubble. This means the church will always be dry, and the exterior of the church being of white stone, of a description which abounds in the neighbourhood, and contrasting with the red sandstone from Wetherall, of which, in lieu of alates, the roof is composed. There is a double bell column at the west end of the edifice. Messrs. Cory & Ferguson were the architects, and under their superintendence the building was erected. Mr. W. Armstrong, of Gileland, contracted for the masonry; Mr. Court, of Carlisle, applied the woodwork; Mr. Norman, of Carlisle, contracted for the roofing; Mr. Thompson, of Carlisle, for the painting and glazing. The cost of the church was about 1,000*l.*, part of which is not yet subscribed.

Bethcoed Park.—A new church has been erected here, and opened for divine service, according to the *North Guardian*. The church is built of stone, and provides accommodation for nearly 200. The edifice is without a steeple, and consists simply of an entrance up the centre, with seats on each side. The chancel is an apsidal one, and on the north side this part of the building opens, by means of a couple of small arches, into a vestry and organ (or rather harmonium) aisle. The windows are small, but numerous, and the church is a fine specimen of a feature in the building. The west end of the church is surmounted by a bell, hung in an open turret. There is a coloured window over the communion altar, and in the arrangements for this part of the church, the Duchess of St. Alban's worked the communion cloth. The seats consist of low chairs, and the church has been sided in the cost of the edifice, and at the opening. The Duchess played the harmonium and started the singing.

Kettering.—The new church of St. Andrew the Apostle, at Kettering, has been consecrated by the bishop of the diocese. The church, which is

built at the north end of the town, is of the Early English character, and is capable of accommodating 500 persons. It consists of a nave, south aisle, vestry, and chancel, and has been built at a cost of about 5,000*l.*, by Messrs. Barlow & Butlin, of Rothwell, from the designs and under the superintendence of Mr. Street, of London, architect. Mr. Godfrey was clerk of the works. The roofs, both of the chancel and of the nave, are high-pitched, and the pavement is of encaustic tiles. There is a small bell turret, with spiral stairs, above the chancel, to be replaced as soon as means are obtained by agreement. The lectern is of brass, and the altar cloth is of maroon-coloured velvet. The frontal was worked by Mrs. W. Lindsay, sister-in-law of the rector, and the super-frontal by other ladies. Previous to the service, a crozier was presented to the Bishop. The crozier was designed by the Rev. F. H. Button, vicar of Theddington, and executed by Messrs. Skidmore & Co., of Coventry. It is in the style of the middle of the fourteenth century; the staff is of ebony, with ivory bosses, and the head is ivory and silver-gilt, jewelled with carbuncles, topes, and lapis-lazuli. It is the gift of certain laymen in the Archdeaconries of Northampton and Leicester.

Walworth Common.—The foundation-stone of a church, to be called St. Stephen's, Walworth-common, has been laid. The temporary iron structure at present in use is too small. The site of the church is in Villa-street, between Albany-road and Westmoreland-road. The architects are Messrs. Jarvis & Son.

Middle Claydon.—The church here, having been restored, has been re-opened by the Bishop of Oxford. Care has been taken, where practicable, to maintain the original fabric intact. The exterior has been restored, Dulton stone being used in the repairs. The tower and chancel are of the perpendicular style of architecture, the latter having been built in 1519, by the Giffard family. The tower has three bells, which have been rearranged, new-framed, and re-hung. In restoring the porch, the old oak front has been stained and made the main feature, the new parts being in keeping. A new vestry and lobby have been built on the south side of the chancel, like the tower and chancel, in the Perpendicular style. In the interior, the old gallery has been taken down, and also the ringing-floor, a new one having been put up over the western arch. The old roof of the nave has been taken down, and a new oak panel one has taken its place, one beam being left to show the reproduction of the ancient work. The seats, the lectern, and the pulpit are all new, and are of the same old pulpit (also of oak), having been re-adapted, and fitted with new base, stairs, &c., has been retained. In the sill of a window in the nave a piscina was found, and has been repaired. The carved oak screen has been restored. In the chancel, the wagon-headed oak roof is embellished with red and gold devices, and the bosses are gilt; Messrs. Clayton & Bell, London, being the decorators. The communion-steps are of superior Devonshire marble, and the remainder of the church is paved with encaustic tiles, by Mr. Godwin, of Hereford. The alabaster monument of the Giffard family has been taken from the mural position it formerly occupied, and placed in the chancel. The monument by Chantry of the late Sir Harry Calvert, Adjutant-General of the Forces, has been restored and heightened, as has also all the other monuments. The reredos, occupying the whole of the stand of the altar, is of alabaster, executed by Messrs. Farmer & Brindley, of London. The centre portion is divided into three subjects—the middle one being the Ascension, that on the left the Resurrection, and that on the right the Day of Pentecost, carved in alabaster, and surrounded by carved scrolls. The total cost of the restoration will be nearly 3,000*l.*, the chief portion of which will be borne by Mr. Frederick Calvert and Lady Lucy Calvert. A short time since the inhabitants of Steeple Claydon were indebted to this same source for the spire of their church. The work has been superintended by Mr. G. Hannaford, under the directions and from the designs of Mr. George Gilbert Scott. The builders were Messrs. Franklin, of Deddington.

Fryerning.—St. Mary's Church, Fryerning, has been re-opened, after having been closed about twelve months for restoration and repairs. The works have been carried out by Messrs. Brown & Son, under the direction of Mr. Chancellor, of Chelmsford, architect. Judging from the extreme plainness of the stonework of the north

and south doorways of the nave, and of the nave windows, the walls of the nave and chancel of this church are believed to be Norman work, probably of a very early date. The walls are constructed principally of the conglomerate, commonly known as "plum pudding stone," mixed with the thin Roman bricks, septaria, and large pebbles. Very little (if any) alteration appears to have been made in the walls, which are very substantial, beyond the insertion in both nave and chancel of windows of a later period. The wall at the west end of the nave appears to have been cut away, and a brick archway formed, opening into a fine specimen of a brick tower, erected very late in the fifteenth century. Previous to the present restoration the roofs of both nave and chancel were comparatively of a modern date, with the exception of two massively-constructed principals at the west end of the nave, which were, no doubt, the remains of an original roof, and which evidently supported one of the ordinary wooden steeples of the county, thus proving that the present brick tower, when erected, was altogether an addition to the church, and not built upon the site of a more ancient tower. The restorations that have been carried out include the stripping off the plastering from the outside walls all round (thus exposing again to view the old conglomerate walls of the Norman period), the restoration of the stonework of the Norman and other windows and doors, and the construction of entirely new open roofs of oak timber, tiled. Internally the chancel arch has been rebuilt in stone, the west gallery removed, and the brick archway of the tower opened up, the whole of the old pews and sittings taken out and replaced with oak benches of simple design, with oak pulpit, reading desk, and lectern, in character with the benches, the gangways being paved with tiles. In order to breathe the church from damp the surface all round has been sunk below the level of the floor and paved, and the church itself is heated by hot water. The organ has been rebuilt, and removed from the west gallery to the north side of the nave, at the west end, by Mr. Rust, of Chelmsford. The total cost of these restorations amounts to about 1,400*l.*

WEEKS'S DUPLEX BOILER.

The spirit tubular boiler which has been patented by Messrs. Weeks & Co. appears to possess considerable merit. It is so arranged that it is impossible for the whole boiler to fail, as, being made in two halves, the contraction and expansion are entirely neutralised; and should any unforeseen accident occur to one half, that portion can be detached and removed without in any way interfering with the working of the other half. The shutting off of either half of the boiler is accomplished by means of gun-metal valves and chambers. The arrangements for removal of sediment seem so simple that any ordinary labourer may clean out the boiler at any time without withdrawing the water from the apparatus or removing a single brick in the furnace. The patentees claim that the boilers being made of cast iron, their durability is far greater than those made of wrought iron, and they show their own confidence in their durability by insuring them for five years.

SEWAGE IRRIGATION AT ABERDEEN.

An experiment in sewage irrigation, the first, probably, so far north, is being made on land belonging to Lieut.-Col. Henry Knight Erskine, of Pittodrie, on his Spittal lands, a little to the north of the city of Aberdeen, between King-street-road and the sea. An agreement was entered into between the Commissioners and Colonel Erskine on the footing of the sewage being sold to him at the rate of 5*l.* per acre to the extent of the land cultivated, he being restricted to a maximum of 5,000 tons per acre per annum. The price of the sewage is thus about a farthing per ton. The whole extent of the land intended to be irrigated ultimately is from fifty to sixty acres, and the sewage is leased for nineteen years. The land lies immediately inland from the Old Town Links, is of fair quality, and has been under ordinary cultivation. The ground in great part has a pretty uniform slope, the primary requirement for sewage irrigation. The whole simply is diverted, when not required, down the main sewers to the ordinary outlet at the harbour. The catch-water drains run off the water to the main spill-water channel, which takes the exhausted sewage away into a burn in the neigh-

bourhood of the Links, and thence into the river Don. The cost of two sewers and tank was about 550*l.*, which will be defrayed partly by Colonel Erskine and partly by the Police Board. The land was prepared in February last. The system of supply and distribution has been found to work well, the sewage flowing easily and uniformly over the land. The exhausted sewage is remarkably clear, while there is no perceptible smell from the operations. These are carried on upon the same principle as at Edinburgh, Barking, Croydon, and other places. The engineering works have been planned and superintended by Mr. R. Anderson, C.E., the Police Board's surveyor. The Lord Provost of Aberdeen has lately visited Hastings, to examine the A B C process of utilising sewage; and the Police Commissioners have put into the hands of Professor Bressler the matter of an analysis of the liquid used in the process, with the view of testing it in connexion with Aberdeen sewage.

THE INSTITUTE OF ARCHITECTS AND THE 1871 EXHIBITION.

No disposition being shown, although certain fresh commissioners have been nominated, to place the president of this Institute, *ex officio*, in the same position as the presidents of other like scientific and artistic bodies, the Hon. Secretary states that the Institute, representing the profession of architecture, feel themselves precluded, on account of this marked omission, from taking part, as a body, in the International Exhibition of 1871.

IS DISTORTION IN ARCHITECTURE THE STYLE OF THE PERIOD?

MANY modern instances of wryness in design seem to show an effort to repudiate the adage of the days of Ben Jonson, which says "By line and rule lives many a fool." If there is any wisdom in adopting a tag-rag style by reproducing broken outlines and unfinished or decayed design, we are wise in our generation. Is it the freedom of Free-masonry, or the modernism, that would be baronial villas, and even streets, have so many nondescript towers and turrets so helplessly copied in detail, and struck to, with tumble-down effect, as if some after-thought or blunder, which puzzles us now to make out what the taste and style of the period is? So future antiquaries may well say (from Marmion):

"The towers in different ages rose;
Their various architecture shows
The builders' various hands."

Since Scott built his "romance in stone and lime at Abbotsford, my conscience!" what a host there has been of retrogressive imitators of the romantic in building, often without making any attempt to present fitness, such as the reproduction in costly stone of the toppling lath and plaster features of old Edinburgh, now excluding dwellers there from plain substantial houses so much required by workmen, and also, by way of contrast, to the broken outline of the ridgy back, piled deep and high, of the old town.

The old times have left much that is good to imitate; why should the beauty and taste of Medieval design be generally so poorly grasped at in modern church-building?

Although the vast proportions of the perfect cathedral church may not be required, perfect, true, and harmonious construction should adorn all churches and chapels dedicated to the worship of an all-perfect Creator. Ancient Pagan temples and idol shrines had true and beautiful proportions, as also had the finished Christian places of worship of the Dark Ages. Why, in these enlightened times, perpetrate such distortion in erecting so many lop-sided churches, with "the taper spire that points to heaven," put up as chance or whim may dictate? Many churches built to please the priest, remind one of the hunchback who, after hearing a friar preaching on God's works being all perfect, asked what could be said of him? "Well," said the friar, "you are a fine hunchback."

Scarcely imperfect copies of the fervent art of the builders in past ages need not be set up all over the land in hotch-potch style, as without being able to read sermons in stone we but play the fool's part, in pursuit of more empty shadow, following the Jack-o'-Lantern of an absurd taste for retrogressive imitations in detail, without the true spirit of the old builders, "whose works have not followed them." J. K.

CYLON.

The foundation-stone of the new Public Markets and Municipal Offices, Colombo, was laid on the 22nd of April last by his Royal Highness the Duke of Edinburgh, in the presence of a large number of spectators, for whom temporary sitting accommodation was provided in an octagonal structure, 70 ft. in diameter. A grand of honour of the 73rd regiment presented arms as the ducal party drove up, the band playing the national anthem, and on alighting under the triumphal arch at the entrance, the Prince and the Governor were received by the chairman and members of the council. The Duke, on advancing to the centre of the octagon, was greeted with loud cheers, and took up a position to the left of the stone. A suitable address was then read by the chairman, and the Prince proceeded to lay the stone in the usual form, assisted by the architect, who had been previously presented to his Royal Highness. The troveal was of chased silver, bearing an appropriate inscription, and the arms of the Municipality, with a ducal coronet at the extremity of the ivory handle. The stone having been declared by the Prince "well and truly laid," the proceedings terminated.

The buildings will consist of two detached blocks, one 200 ft. by 60 ft., running parallel with the face of the site; and the other 170 ft. by 80 ft., at right angles to it in the rear. The central portion of the former will contain the offices of the municipality, with a double row of shops on each side, covered with iron roofs. The rear block, which is to be used as a public market, will be entirely of iron. The buildings generally will be of an ornamental character, and a lofty clock tower is to form a prominent feature. The buildings have been designed by Mr. James G. Smith, Government architect, under whose directions the work is to be carried out.

THE CONDITION OF LINCOLN.

OUR correspondent, "Gargoyle," has sent a reply to "A Lincoln Householder" in which he maintains the correctness of his former statements, and concludes with the observation,—"I still think that at Lincoln the arts are sacrificed at the shrine of Mammon, and that, in their efforts to avoid the powers that be are falling fairly into Charybdis."

We do not think it necessary to print the whole. The correspondence will doubtless serve to lead enlightened inhabitants of Lincoln to look about them, and probably result in advantage to the city,—a place of unsurpassed natural beauty, with an unrivalled cathedral, and rich in associations.

SWANSEA WATERWORKS.

Six.—On the 21st of May (p. 410), and the 4th (p. 453), there are some remarks relative to the Swansea Waterworks. Will you allow me briefly to say that Mr. Williams, the contractor, received 600*l.* as a bonus for completing the line of conduit before the time specified in his contract, as Swansea was suffering from a water famine. The completion of this conduit enabled Swansea to receive, subsequently, in three years, not less than 3,000 million gallons of water, which, at 2*d.* per 1,000 gallons, would represent 25,000*l.* This, in my opinion, is a liberal return for the bonus of 600*l.*, and also warrants some expenditure in present repairs. Mr. Williams had, in his contract, a large work to execute, in and over a most difficult country, in my opinion, he did this work well and honestly, and earned all the money paid to him. Works of all kinds require supervision and repairs,—waterworks more, probably, than ordinary works, as water is incessantly active; and, when confined by an embankment or in a conduit, active for mischief. The conduit at Swansea is some 7 miles 300 yards in length, laid, in part of its course, over a coalfield in work. There are also trees on part of the line, and roots have entered at joints not more than 1.16th of an inch wide, which have forced such joints, and caused leakage.

The conduit is, however, now in course of repair, and I beg the cord may not be very large. But, large or small, Mr. Williams, the contractor is not answerable for it. In my opinion, the editor of the *Cambrian* is wrong in stating the cost of the Swansea Waterworks at "160,600*l.*," and the income at "3,500*l.* a year." The cost, including town service-pipes to the

extent of nearly 16,000*l.*, as given in my final report, is 70,355*l.* 18*s.* 8*d.* This report, with all its details, has been at the service of the editor of the *Cambrian*, but he does not appear to have used it. As to the income of the waterworks, if my recollection be correct, this, in 1868, amounted to upwards of 6,000*l.* per annum, and was increasing. As a rule, I do not notice these local statements, and I now only ask you, Mr. Editor, to give a place to these remarks and explanations to enable me to say that in my opinion the public of Swansea never expended 160,000*l.* to better purpose than in giving it as a bonus to Mr. Williams, the contractor, for the work done. I wish also to say that Mr. Cousins, the borough engineer, is only responsible for the due maintenance of the works as handed over to him. Personally, I feel under a deep obligation to Mr. Cousins for his untiring courtesy to me during my connection with Swansea. He has carried out the sewerage and drainage within the town in the best manner, and with good sanitary results.

ROBERT RAWLINSON.

RAFFAELLE AND MICHELANGELO.

BURLINGTON FINE ARTS CLUB.

Few persons occupying the narrow stairs of 177, Piccadilly, to rooms over a shop, would suppose they were entering the premises of a club that includes a considerable number of well-known lovers of the fine arts, and where, from time to time, during my connection with the works of art of past ages are exhibited. Such, however, is the case. A change in this respect, is looming in the distance. The number of members is to be increased from 250 to 500, when the committee will be in a position to recommend removal to a larger house, and to take such other measures as shall increase the advantages of the club. The honorary secretaries are Messrs. Ralph N. Worsum and J. Bevington Atkinson.

The exhibitions, to which we have alluded, have for their object the thorough elucidation of some school, master, or specific art. On the present occasion it consists of a collection of drawings and other illustrations of the works of Raffaele and Michelangelo of rare merit and interest. Her Majesty the Queen lent for a few days, in aid of the collection, a number of original drawings from the Windsor Castle collection. These have been removed, but what remain will afford ample enjoyment to those who, through knowledge of a member of the club, obtain the privilege of examining them.

"NEW BRITISH INSTITUTION."

A COLLECTION of pictures by old masters and deceased British artists is now on view in the gallery, 80, Old Bond-street. We should belie our convictions if we said that we expect this Institution, as at present constituted, to supply the place of the defunct British Institution, fused an exhibition of "Old Masters." Putting this idea quite on one side, we may fairly say that an interesting collection has been brought together on the present occasion, and will well justify the expenditure of a shilling. Some of the pictures are avowedly the property of dealers, and are for sale; the remainder are lent by owners. In the whole there are 140 pictures, many of them good.

A NOVEL COMPETITION.

THE French Society of Architects of the Department of the North have instituted a competition with the view of making known works of modest merit. They invite the transmission of two photographs of an entrance-door to a private residence, including the door-frame and surrounding, such to the balcony above, should such photograph be the selection of the best will be made by the architectural societies with which this society is in connexion. The photographs must be sent by the 30th of September next, and must be from the executed work, not from drawings. Reputation is the chief prize offered, but medals will also be given, besides a complete set of the photographs to the competitor whose work is selected as the best.

As Mr. Vandenberg, the secretary, who dates from Lille, requests us to make the competition widely known, we conclude it is international. The programme issued by the society may be seen at our Office.

DRAINAGE OF LIVERPOOL.

Six.—Some two years ago I was permitted, by your favour, to make some observations on the then bad sanitary condition of Liverpool, with its resulting high death rate, which stood at 36 per thousand. Since that time a vigorous policy of sewerage has prevailed; that is, great benefit has been derived from the aid of the medical officer of health, being forcibly converted into water-closets, the effect of which, coupled with the late cold spring, has been to reduce the death rate to 22 per thousand, a rate nearly rivaling the proverbially healthy towns of Belfast and Bristol.

Lately, it seems to have sprung up among some members of the health committee that their medical officer was doing too much, not exceeding his duty, but citizens of private law, the committee, being greater than the pockets of the landlords or owners of house property were disposed to bear, and although they have been in the minority of the committee, they are now doing a willing ear to each and every one of the systems lately proposed, from the dry-earth system to cesspools, &c., plainly intimating at the same time, though not in a direct manner, that they desire the medical officer to stay his hand; while, in being responsible for the health, is distracted, and does not know how to proceed.

One would think, in face of the facts, and remembering that Liverpool is mainly built on the slopes and top of a high hill forming a rocky bay, with the river at its base, that it would be better to leave the matter alone, and see the effects of the various trials now being made in several inland towns, where no such facilities as exist here for the disposal of the sewage can be obtained. It will alone, in fact, until it is shown that something better is applicable; but no; some evil influence is working, and this public body, the health committee, is being misled by the reports which the reporters are excluded, for the avowed purpose of changing, if possible, the disposal of the sewage of the town to the sea, and the committee, in the meantime, are spending upon the sewers and the present depressed state of Ireland, the people look upon these private meetings with some alarm. The committee are not to be deceived by the fact that a perfectly healthy town is not the primary object of the health committee, or they have only to pursue the policy of sewerage, and the committee are not to be deceived by the fact that the power, owners and others to alter and convert privies into water-closets by a given date? Each owner would then be treated as his neighbour, and no favour could be shown or disadvantage arise. Life and health are at any time and in any place of vastly greater value than any mere sewer, and the people of Liverpool will be glad of your help towards that object.

R. G.

CAMBERWELL CHARITY ESTATE COMPETITION.

Six.—For the information of your subscribers who may have been misled by the terms of your correspondence, Mr. Gough, inserted in your issue of the 4th inst., I beg to state that the design sent in by the local surveyor to the charity is not the best of the designs sent in by the committee. That it has not been determined to refer the decision on the plan to the Vestry Surveyor. That the terms "surveyor" and "charity" are not the same. That the surveyor are not anonymous; therefore no competitor has to adjudicate upon the designs. That it has been proposed to the Charity Trustees to appoint a committee to report upon the plan, and leave the award in their hands. That the Charity Trustees will wait such a recommendation to be ratified by the vestry.

Geo. W. MARSDEN, Vestry Clerk.

STAINED GLASS.

MESSES. CLAYTON & BELL completed two important windows for West Sunday. One is in *Dunstable Parish Church*, the great window in its south transept, and has been raised in memory of the late Dr. Schofield. The subjects chosen for the work are Scriptural incidents recorded only in the Gospel of "the beloved physician," St. Luke, who, with his emblematic winged hound, is prominently represented in the upper part of the window. In the middle tier is shown, in a series of subjects, the people of the Good Samaritan, as especially suited for the memorial of a physician, and additionally so as being a parable recorded by St. Luke only. In the tracery are four angels,—two hearing respectively open books, inscribed "Evangelium" and "Actus Apostolorum"; the other two bearing, in allusion to the medical character, a staff and a branch of herbs. The work is designed and executed as to style in close conformity with the architecture of the building. The second window is a memorial of Colston, the philanthropist, in the north transept of *Redcliffe Church, Bristol*, a notice of which we may find another opportunity to give. The cost of it was raised by subscription.

Holy Trinity Church, Preston.—Memorial windows have been put up in the north and south transepts of this church, in stained glass of a grisaille geometrical character. The tracery surrounding each of the openings is filled with foliated work. The windows are in memory of the Rev. John Henry L.L.D., for many years incumbent of this church. The cost was 150*l.* They have been supplied by Messrs. Edmundson & Son, of Manchester.

Bath Abbey.—The last addition to the series of painted windows in the abbey is one erected in

the north aisle by the Rev. Prebendary Kemble, to the memory of his son, who died at sea. The idea prevailing throughout the greater part of the design is that of early purity. The family arms occupy the upper compartment in the tracery, and the four small compartments beneath are filled by representations of Isaac, David, Joseph, and Jacob. Each of the lancet lights in the body of the window contains two designs, a larger one and a smaller one, the latter being placed at the bottom. The main subject in the central light is "The Good Shepherd." The two other leading subjects occupy the upper portion of the remaining four lights, "Eli and Samuel" being inserted in the first and second compartments, while the third and fourth the scenes illustrated in Timothy being instructed in the Scriptures by his mother and grandmother. In the lower portion of the window is placed a series of minor designs, three in number. The central one is "Angels raising the Dead from the Deep," which is flanked on the right by a representation of "Eliphaz raising the Son of the Shunammite Woman," and on the left by the scene of the Lord raising the Widow of Nain's Son." The window was designed and executed by Messrs. Clayton & Bell.

Salisbury Cathedral.—A painted glass window has been recently placed in the south transept of this cathedral by Mrs. George Marsh, in memory of her father, the Ven. William Madoclad. The window is the work of Messrs. Clayton & Bell, and in its execution they have observed the characteristics of the various specimens of ancient glass which are to be found in the cathedral, believing that to be the most suitable way of treating the work. The window is divided into five compartments. In the top is the subject, "Noli me tangere." The centre part represents "The Angels and Marys at the Tomb;" and at the bottom of the window is "The Burial of the Saviour."

St. Mary's, Oxford.—The workmen of Messrs. Clayton & Bell, of London, have just inserted, near the principal entrance to this church, a stained-glass window to the memory of the Rev. Isaac Williams, once curate to Dr. Newman, and for many years connected with St. Mary's Church. The design comprises a four-light window, divided with mullions, and the figures in the lights are the four Evangelists, and above them St. Augustine, St. Gregory, St. Jerome, and St. Ambrose. These are surmounted in the scrolls with figures of angels.

DISSENTING CHURCH BUILDING NEWS.

Doncaster.—The Wesleyans of Doncaster are about to build, at a cost of some 7,000*l.*, a new chapel, in St. James's-street, Doncaster, upon a site recently granted of the corporation for that purpose, and of which Mr. Watson, of Wakefield, is the selected architect. The new chapel will be built in consequence of the existing place of worship in Priory-place having become inadequate to the requirements of the society. The somewhat novel ceremony, so far as a chapel is concerned, of turning the first sod was performed by the Mayor of Doncaster, in the presence of an immense concourse of people. The Mayor, who is a churchman, invited the members of the corporation, the ministers of the society, and the building committee, to luncheon at the Mansion House, in honour of the occasion; the Mayor of Leeds being also present. A procession was formed at the Mansion House, headed by the band of the Third West York Militia, the mayors of Doncaster and Leeds, the water-bearers and police leading, and followed by the corporation, some of the officials of the borough, members and ministers of the Wesleyan society, and about 900 Sunday-school children. A silver spade was presented to the Mayor of Doncaster, with which he performed the ceremony of the day. The chapel is to be built by Mr. Harold Arnold, of Doncaster, and when completed will accommodate 1,000 people. According to Mr. Watson's design, the building will be in the Italian style. It will be erected at the top of the new street now forming in Crowther's-garden, and will face St. James's-street. At each side will be a space of 46 ft. wide. On the right-hand side will be built the boys' school, and on the left the school for the girls and infants. The front elevation and also return staircases, walls, will be of stone, having circular-headed doorways and windows on the ground floor; and above, in the centre, there will be a large traceried circular-headed window, which, in all probability, will be filled with stained glass. The extreme size of the chapel

building will be 57 ft. 4 in. wide by 107 ft. long. This will include large band-room, ministers' vestry, and other offices on the ground floor at the rear. A gallery will run round both sides and one end. The chapel will be built with a clearstory, which will have seven circular lights on each side, and the clearstory walls will be supplied by cast-iron columns and wrought-iron girders, the former also supporting the side galleries. The ground floor and gallery will be filled with stalls; and all the woodwork will be executed in red deal, stained and varnished. The schools on each side are designed to accord with the chapel. The front facings right and left will be of white bricks, with red arches, bands, and other ornamental features. Each wall will present a frontage of 85 ft., and each will afford accommodation for 250 children. The tender supplied by Mr. Arnold, of Carr-lane, was for 5,262*l.* Though not the lowest, the committee took into consideration the fact that Mr. Arnold was the owner of the land adjoining their site, and as he was anxious to serve them by erecting near their new chapel houses of first-class appearance, the committee endeavoured to fulfil the contract for the building. The total cost of land and building will be a little short of 6,500*l.*

Lightcliffe.—The general committee of the proposed new Congregational chapel has had a meeting. Sir Titus Salt presiding, when the plans for the new church were submitted, after having undergone several alterations. The tower and spire will be 130 ft. high, and the design is Gothic. In the rear of the church a new hall and house will be built, in a suitable style to the other building. The total cost, including everything, is about 4,800*l.* The plans were adopted, and Messrs. Lockwood & Mawson, of Bradford, will commence the work as early as possible.

Wokingham.—The foundation-stone of a new Wesleyan chapel has been laid in this town, on the 10th inst. The new chapel will be built by Mr. Whiting, of Reading, from plans prepared by Mr. T. S. Lansdowne, architect, Swindon. The shape of the building is a parallelogram, and it will be composed of red brick, with Bath stone dressings. The roof will be open timber, built diagonally, boarded, stained, and varnished. The seats will be open, stained, and varnished. The style is the fourteenth century Gothic, and the street front will contain three gables, with centre porch, and the roof will be supported on stone corbels. The dimensions are 51 ft. by 33 ft., and there will be accommodation for 350 persons. The cost is about 1,000*l.* It is intended to erect a schoolroom, which will increase the cost to 1,400*l.* The late Mrs. Heelas had given 400*l.* to the building fund, and Sir Francis Lyett, who has contributed to various other Wesleyan chapels in different parts of the country, has given 25*l.* A coloured drawing of the new chapel, by the architect, was exhibited in the Town Hall.

FROM SCOTLAND.

Bonnyrigg.—At a special meeting of Commissioners of Police for the burgh of Bonnyrigg a previous resolution was confirmed "to lease or rent a piece of ground near the burgh, to be used as a pleasure-ground, or place of resort or recreation, in terms of the General Police and Improvement (Scotland) Act, 1862." The park, which is situated on the farm of Polton East Mains, and in close proximity to the burgh, measures 527 imperial acres. A lease of ten years, from March 1, 1869, is offered at the yearly value of 14*l.* 10*s.*, the estimated cost of inclosing the park and effecting other improvements is 72*l.* 10*s.* The total outlay is computed to amount to 100*l.*, and it is proposed to be paid in yearly instalments by an assessment of 1*d.* per pound, which would liquidate the cost in six years.

Glasgow.—The foundation-stone of a new bridge, to be called the Albert-bridge, has been laid at Hutchesontown, Glasgow, by the Earl of Dalhousie, as Grand Master of Freemasons.

Stirling.—The late Mr. Thomas Smith, of Glasgow, who died lately at Arlinton, has bequeathed 5,000*l.* for building a museum, picture and sculpture gallery, and artisans' reading-room and library, in Stirling, for the district, with nearly 500 oil paintings, water-colour drawings, and articles of vertu, valued at 6,000*l.*, and 14,000*l.* to endow the institution.

Paisley.—The new scheme for an additional supply of water to the town of Paisley has been inaugurated. A number of gentle-

men proceeded to the new filters at Stanely, which is situated immediately below the Braes of Gleniffer, and the protest there formally turned on the water. This extra supply is secured from a large reservoir at Netherbute, about seven or eight miles from Paisley, and the water is conveyed by gravitation to the filters at Stanely, about three miles from the town. The top of the receiving-tank at the Stanely filters is placed about 10 ft. higher than the top of the High Church steeple, which is erected on the most elevated part of Paisley. The reservoir, when full, will contain 77,000,000 cubic feet, extends over an area of 100 acres, and the maximum depth is 35 ft. The whole scheme is estimated to cost 77,000*l.* The Water Commissioners will be able to pay the interest of the money without increasing the public rates.

Nairn.—Extensive alterations and additions to the Nairn Sheriff Court-house and County Buildings have just been completed. A range of buildings has been added in the rear of the original edifice, which comprises debtors' rooms, prison store-room, new cell accommodation, and a prison governor's house. The exterior of the building has also been improved. A new clock has been placed in a spire.

Dundee.—Recently a movement was commenced by Provost Yeaman, with the view of getting the Old Steeple repaired and renovated; and a numerous meeting of gentlemen, who had been requested by the Town Council to aid in the matter, has been held in the Town Hall. The Town Clerk read letters which he had received from the Earl of Airlie, the Earl of Strathmore, the Earl of Southesk, Lord Warburton, Lord Kinmaird, Sir John Ogilvy, M.P., Mr. Armitstead, M.P., and others, expressing their readiness to have their names placed on the committee, and to assist in defraying the expense of the work of restoration. Resolutions approving of the efforts now being made for the purpose of repairing and renovating the steeple in accordance with its original style of architecture, and agreeing to take the advice of Mr. Robert Mathieson, Assistant Surveyor of Woods and Forests, as to what is necessary to be done, were unanimously agreed to. The Old Steeple is supposed to have been erected during the fourteenth century.

Perth.—The foundation-stone of the new church in Tay-street, for the Free Wesleyan congregation, Perth, has been laid by the Earl of Dalhousie. The design for the new structure was prepared by Mr. J. Honeyman, jun., architect, Glasgow. The building was commenced in the autumn of last year, and considerable progress has since been made. The site is about midway between the Post Office and the County Buildings, on the line of Tay-street. The structure will be in the style of church architecture which prevailed in the middle of the thirteenth century in France and other Continental countries. The length of the building, exclusive of the vestry and the proposed Presbytery Hall, is 114 ft., and the width 63 ft. The main entrance to the church will be in the base of the tower, fronting Tay-street and the river, the lower part of the tower forming a porch. The lower wall measures 30 ft. over the buttresses, and the height from the pavement to the top of the spire will be 212 ft. The church will be divided into three aisles by iron columns supporting the sides, galleries, and roof. The ceilings will be plastered, but the principal cupolas, which are very ornamental, and the porches will be exposed to view. The height of the centre aisle from floor to ceiling will be 43 ft. Provision will be made for ventilating the church by drawing the vitiated air into the tower. The pews will be 33 in. wide, affording a space of 20 in. to each side. Accommodation will be provided for upwards of 1,000 persons; and it is understood that the total cost, exclusive of the site, will be about 8,000*l.*—The opening of a new Roman Catholic church, dedicated to Our Lady of Perpetual Succour, in connexion with St. Mary's Redemptorist College, Kinnoull, Perth, has taken place. The new church is immediately to the north of the collegiate buildings, which, together with the church, were designed by Mr. Beiton, architect, Perth. The church is in the Early English style.

Inverness.—The new public markets have been formally opened by the magistrates and town council. The building has been about a year in course of construction, and is erected on the open space where the markets were formerly held. The site is central, the main front being in Academy-street, directly opposite the railway station, while at the extreme end there is an entrance from Church-street, and there is also a

side gateway into Union-street. The whole building is easy of access. The cost of erection was about 3,000*l*. The architects were Messrs. Matthews & Lewis, of Inverness and Aberdeen.

Roths.—The foundation stone of a spire, which will be furnished with a clock, has been laid in Roth's. The ceremony was performed with Masonic honours. The carpenters' society, and the children attending the various schools in the town, took part in the procession, and the Volunteers acted as a guard of honour. The work has been instituted by the Rev. George Gray, of the parish church, on which building the spire will be erected. The cost was estimated at 300*l*.
Greenock.—Bearing damage has been done to the new works of the Greenock Water Trustees at the Gryte, the repairing of which it is estimated will cost fully 2,000*l*. It is stated that the masonry of the wall was not sufficient to withstand the weight of the embankment behind it, and was forced in, and that the embankment will have to be cut out, and the tunnel rebuilt.

Books Received.

A Guide to the Construction and Management of Workhouses: together with the Consolidated Order as amended by subsequent Orders of the Poor-law Board. By EDWARD SMITH, F.R.S., &c., Medical Officer of the Poor-law Board, and Poor-law Inspector. Knight & Co., Fleet-street, 1870.

Dr. SMITH has here prepared a Guide which, in a compendious form, includes sanitary, legal, and general observations, and supplies the requirements of the local executive on all the duties which devolve upon them.

The Consolidated Order has been printed as the third part of the work, and those clauses which have been amended or superseded by subsequent orders of the Poor-law Board have been indicated and altered.

The increased attention which has recently been given to this subject has led to improved administration, with an expenditure of very large sums of money, and has induced the Poor-law Board to express their views on certain subjects more definitely than heretofore, by the issue of "Instructions" and "Suggestions," all of which are printed in this work, and will be at hand for reference.

Architects have long desired such "Instructions" when preparing plans; and we may expect that those officially issued, with the remarks upon the selection of sites, and the arrangement of the different blocks of buildings constituting the workhouse, which give this book its value, will lead to the saving of time and expense in the performance of that duty.

The instructions on the site, drainage, and water supply, construction, and arrangements of workhouses, are full and detailed, and constitute a chapter of the book in themselves.

The Mystery of Edwin Drood. By CHARLES DICKENS. Parts I, II, and III. London: Chapman & Hall.

THIS last chapter of this tale published closes with the sentence,—"And thus, as everything comes to an end, the nascentable expedition comes to an end—for the time." Little thought the thousands who read the expedition of the great novelist himself had come to an end—here; that the busy brain that was evolving the mystery about which were clustering new acquaintances, and through which fresh insights to man's heart were to be gained, would work no more,—that a dear friend, though possibly unknown to him, had passed away, and that Charles Dickens would write no more. The universal opinion as to the value of his works has been shown by a wide burst of sympathy, and it is not too much to say that England and America feelingly weep his loss. More than one strange coincidence with reference to his death has been mentioned, notably the circumstance that, as he died, on the 9th of June, 1870, on the 9th of June, 1865, he most narrowly escaped death on the South-Eastern Railway. It is a small circumstance, still it is cogent, that the first advertisement in each of the published numbers of "Edwin Drood" is one of "mourning," surrounded with a wide black border.

Concerning the remainder of the work, the publishers have in type something more than enough for three numbers, in the whole rather more than half the work. It was at first thought that Mr. Dickens had left a rough scheme of the

complete work behind him, but at present this has not been found, and we believe we may state that no attempt will be made by another hand to finish it. It may interest some to know that more than 50,000 copies were sold of No. 1, and that the steady sale, judging from that of the numbers, promised to be 40,000.

All our readers, doubtless, by this time, have heard that on Tuesday morning last, early, and quite privately, the remains of our great novelist were buried in Westminster Abbey. The grave is in Poets' Corner, at the foot of Handel's, the head of Sheridan's, and between Lord Maccanly and Cumberland, the dramatic poet. A few feet removed, and near to the side of Dickens, but towards his feet, lie Johnson and Garrick, while near them repose the remains of Campbell. The statue of Addison and the bust of Thackeray overlook the grave at its head: Shakespeare's monument is not far from its foot, and Goldsmith's monument is on the left.

VARIORUM.

We are glad to learn that the "Photographic Art Journal" is about to give up its second-hand title, to which we objected on its first appearance, and is about to appear with a new one in a fresh form. No. 4 includes a clear reproduction of the Woodbury process, of a painting called "Le Favori du Roi," by a rising Spanish artist, M. Zamañu, and one of a beautiful study of heads and hands by Raffaele.

Mr. Bailey Denton has published in a separate form (through Messrs. Spon, Charing-cross), his paper on "Sewage Farming," with remarks on the position of sewer authorities in relation to lands to be used for sewage in applied, first before the Central Farmers' Club in March last.

"Report to the Tottenham Local Board of Health on the Disposal of the Sewage of their District, May, 1870. London: Spon." The Committee who so report have, after considerable investigation and trouble, come to the conclusion that irrigation is the best mode of disposing of sewage. They deprecate the idea that sewage farms are "miasmatic fields," "putrid quagmires," or anything of the sort; and assert, on the contrary, that as a rule the mere visitor would not know that he was on a sewage farm at all. They have had no difficulty in finding land wherever to commence sewage farming at Tottenham. The Tenth Annual Report of the Amalgamated Society of Carpenters and Joiners, from December, 1868, to December, 1869. Kenny, Printer, Comden-road." From the remarks of Mr. Appleghart, the general secretary, it appears that, notwithstanding the continued depression of trade, the general health and progress of the society have been highly satisfactory. The increase made in members and funds, however, is not equal to that of 1868; but the increase made, the suffering and distress relieved and prevented, and the quiet useful work done, are said to furnish cause for gratification. After meeting an exceptionally heavy expenditure, there is a balance of 440*l*. 18*s*. 5*d*. out of the year's income. The society has admitted 562 new members, and opened seventeen new branches, five of them in the London district, four of which were old-established local societies.

—The Nineteenth Annual Report of the Amalgamated Society of Engineers, Machinists, &c., for 1869. Kenny, Printer, Comden-road." The general secretary, Mr. W. A. Alcock, states that he has to record a very large diminution in the funds; indeed, so much so that, notwithstanding the fact of their income having amounted to no less a sum than 82,406*l*. 13*s*. 21*d*., their expenditure has exceeded that amount by 22,821*l*. 14*s*. 4*d*., the total expenditure being 85,227*l*. 7*s*. 5*d*. 104,928*l*. 4*s*. 4811*l*. 11*s*. 6*d*. less than in 1868. This large expenditure has entirely resulted from the lengthened depression of trade experienced not only in the United Kingdom, but in our Colonies and the United States of America—such a depression as the society have never encountered before, and band amounted to 38,599*l*. 2*s*. 11*d*., to which must be added the income for 1869, namely 82,406*l*. 13*s*. 21*d*., making in all 131,105*l*. 15*s*. 4*d*., from which sum is required to be deducted

104,928*l*. 7*s*. 6*d*., the total expenditure, leaving a net balance of 76,176*l*. 7*s*. 10*d*. During the twelve months the society have paid as donation to unemployed members the sum of 59,960*l*. 7*s*. 11*d*.; to sick members, 17,777*l*. 18*s*. 10*d*.; to supernumerary members, 8,054*l*. 17*s*. 8*d*.; in sixteen cases of accident, as per 23rd rule, 1,600*l*.; and for funeral benefit, 5,600*l*. 8*s*. 24*d*.; being in all 93,014*l*. 11*s*. 10*d*. paid in support of the five principal benefits of the society, or 2*l*. 15*s*. 5*d*. per member.—

"Notes to accompany a Series of Photographs designed to illustrate the Ancient Architecture of Southern India. Plans for Government, and described by Captain LYTTON. Edited by JAMES FRANCISON, F.R.S. London: Marion & Co."—In these Notes are described, according to the Preface, nearly all the temples worthy of a visit in the South of India. The Notes are given gratis to the purchaser of ten of the photographs. The text has been revised and corrected by other scientific gentlemen, including Mr. Scott Conveying Railway Trains across the Straits of Dover; showing the Origin of the Idea. By Evan Leigh, F.S.A. London: Longmans & Co." The author of this pamphlet says, in the outset,—

"In the year 1861, I first conceived the idea of conveying railway trains across the Straits of Dover, and took a patent for the purpose, and with me other scientific matters. In the following year I exhibited my patent ship in London to the Lords of the Admiralty and a number of other scientific gentlemen, including Mr. Scott Russell, having been introduced to most of them by Rear-Admiral Denham. After this I sent my models to the Great Exhibition of London in 1862, and the whole consisted of hundreds of lithographs, with a printed description of my new ship, showing how railway trains might be conveyed across the Straits of Dover, and other places. Of great amount of curiosity was excited at the novelty of the idea, this being the first that was proposed."

Mr. Leigh appears to have since improved his scheme. The paddles are protected, by being inserted amidships, instead of at the sides, and the form of the paddle is like that of water-wheels. There are no chains for the trains to be dependent on; and as the boat will not draw more than 7 ft. or 8 ft. of water at most, with train and coal on board, if made without pontoons, and only about 12 ft. with them, it would be unnecessary to change the present route, i.e. Calais, Boulogne, or any other port.

Miscellaneous.

Moving a Windmill Entire, for Sixteen Miles.—A novel experiment, though not quite so sensational as the moving of a hotel at Chicago, has been the removal of a wind flour-mill, with its fittings, from Westerns to Cieshoworth, Norfolk. The mill is a wooden structure, and, with its machinery, of enormous weight. It stood upon wheels, and having been purchased by a man living at Cieshoworth, he determined to endeavour to draw it along the road by a traction-engine, but all efforts to find one strong enough proved ineffectual; the application, however, of a powerful steam cultivation engine proved more successful. In passing along the route various expedients had to be tried, such as in nailing a mill the engine proceeded to the summit, and then pulled the mill up with a chain, and so carefully had the task to be performed, that it occupied three days to make the journey. In crossing the Ouse, it was feared the celebrated long bridge would not be strong enough, but the engine having first passed over, the mill itself was drawn over, the bridge timbers creaking.

Projected Improvements at the County Gaol, Chelmsford.—The Committee of Justices appointed to carry out the enlargement of the cells in the two old wings of the county gaol at Springfield, and to alter them so as to correspond with the cells occupied by the female prisoners in the other wing, have met to examine the tenders sent in for carrying out the works. The following tenders were opened, the lowest on the list being accepted—Adamson, 5,726*l*.; Munday, 6,600*l*.; Capon, Manningtree, 6,300*l*.; J. Grimes, 6,039*l*.; Wells, 4,700*l*.; J. Brown, 4,600*l*.; Runkles, 4,450*l*.; Farmenter, 4,615*l*; Saunders, Dedham, 4,430*l*. (accepted).

The Architectural Association.—At the ordinary meeting, on the 3rd of June, Mr. T. Blashill read what was entitled "A Paper on Papers," the principal purpose of which appeared to be to urge young men to work rather than to read, and to acquire knowledge practically instead of taking it up second-hand.

To see Down a Well.—The New Hampshire *Journal of Agriculture* suggests an excellent plan for exploring the bottom of a well:—"It is not generally known how easy a matter it is to examine the bottom of a well, cistern, or pond of water by the use of a common mirror. When the sun is shining brightly hold a mirror so that the reflected rays of light will fall into the water. A bright spot will be seen at the bottom, and the light to show the smallest object very plainly. By this means we have examined the bottoms of wells 50 ft. deep, when half full or more of water. The smallest straw or other small object can be perfectly seen from the surface. In the same way one can examine the bottom of ponds and rivers, if the water be somewhat clear, and be agitated by winds or rapid motion. A wall or cistern be under cover, or shaded by buildings, so that the sunlight will not fall near the opening, it is only necessary to employ two mirrors, using one to reflect the light to the opening, and another to send it down perpendicularly into the water. Light may be thrown fifty or a hundred yards to the bottom, as desired, and then reflected downward. We have used the mirror with success to reflect the light around a field to a shaded spot, and also to carry it from a south window through two rooms, and then into a cistern under the side of a house. Half a dozen reflections may be made, though the mirror diminishes the intensity of the light. Let any one not familiar with this method try it, and he will find it not only useful, but a pleasing experiment. It will, perhaps, reveal a mass of sediment, at the bottom of a well, that has been little thought of, but which may have been a fruitful source of disease, by its decay in the water."

The "Clameur de Haro."—The States of Jersey gave the English railway company that is forming a line between the towns of St. Heliers and St. Aubin the site of the slaughter-houses at the head of St. Heliers Harbour for the erection of a railway station. The grant, however, was attended with certain conditions respecting the providing of suitable accommodation for slaughtering. The contractor had proceeded to abolish the buildings without complying with the necessary conditions, when Mr. David de Quetteville, one of the judges of the Royal Court, proceeded to the spot, and raised the *Clameur de Haro*, which consists in the person raising it falling on his knees and crying out, "*Haro! Haro! A l'aide, mon prince, on me fait tort!*" The workmen immediately desisted, as they were bound to do under a heavy penalty, and the work was stopped. A special meeting of the States (the Island Parliament), was convened, and it was resolved, after a stormy discussion, to prevent any further proceeding with the work until a satisfactory agreement had been made with the company for the erection of new slaughter-houses.

The Prehistoric Remains at Dartmoor.—At a recent meeting of the Ethnological Society, Mr. G. Spence Place presented a "Report on the Prehistoric Antiquities of Dartmoor," forming one of the series of reports being now collected by the society with a view to obtaining accurate information on the present condition of the megalithic monuments of this country. After noticing the physical features of the district, the author described in detail the numerous stone circles, avenues, menhirs, cromlechs, cairns, and other prehistoric monuments of Dartmoor. He suggests the idea that the stones in some of the avenues may have been erected in commemoration of the death of persons of distinction, one being added for each burial. The depressions on the summits of some of the cairns were regarded rather as indications of artificial excavation than of subsequent disturbance by treasure-seekers. Evidence was adduced of the wanton destruction of the granite blocks in some of the cromlechs; and both in the paper and in the subsequent discussion attention was directed to the importance of extending legislative protection for these prehistoric monuments.

Telegraphic Communication.—It is understood that application has been made for letters patent for constructing a cylindrical iron kerb for reception, repairing, and maintaining telegraph wires, to be of the same external form and size as the stone kerb now in use. Should this, in the opinion of practical men, be available, it must be a means of extending telegraphic communication, and prove of great public utility and economy, by preventing the constant necessity of taking up the roadways and pavements.

Palmyra and Tadmor.—The wife of Capt. Burton, the traveller, writes to the *Morning Post*, from Damascus a pleasant letter about the East. She states that the road to Palmyra and Tadmor is now open to European travellers. She has visited them, and says that Palmyra is only worth visiting if some days can be given to it, especially to examine the old Palmyrene tombs, the last of which there remains to be visited. Tadmor and its vicinity it would not be of doubt, she thinks, to revive and cultivate when there is protection for life. Speaking of the tomb-towers, Mrs. Burton says:—"There are three tomb-towers which still may yield results; the people call them Kasr el Zaynah (pretty palace), Kasr el Asba (place of the masons), and Kasr el Arus (place of the bride). Explorers, however, must bring ropes and hooks, ladders which will reach to 80 ft., planks to bridge over broken staircases, and a stout crowbar. We had none of these things. I have little doubt that the upper stories still contain mummies, tesserae, and other curiosities. We made sundry excavations, but they were unimportant and cost us not long enough for good results. The march from Damascus to Palmyra may be done in four days by strong people well mounted, as we did on return."

The Derby Memorial.—The Grocers' Company will subscribe £1001. to the fund now being raised for erecting a statue of the late Earl of Derby. A general meeting of the subscribers to the memorial in the former parliamentary division of North Lancashire was recently held at Preston. The amount promised is £5001. 13s. The sum actually received in subscriptions is £1,283. 16s. The chairman said he had received the consent of the Duke of Devonshire to form a committee. He also stated that he had seen Mr. Foley, the sculptor, who said that the cost of the statue would be about £1,200. It was resolved unanimously to adopt the recommendation of the general committee that the testimonial should take the form of a statue. The statue committee is to consist of the Duke of Devonshire, Colonel Patten, Colonel Greene, Lieut.-Colonel Crooke, and Messrs. Holt, Herkiss, Sherr, and Parker. It was resolved that the statue should be placed either in Lancaster or Preston.

Opening of the Darlington Polytechnic Museum.—The collection of antiquarian objects of art and science, now being exhibited in the Mechanics' hall, Darlington, is valuable and extensive. The objects which claim and receive chief attention are the paintings, which, though not properly a legitimate element in the collection, are additions and attractions which the committee secured. Among the results of the labour of skilled mechanics are an oak and elms Gothic sideboard, and other articles of furniture worth exhibition; specimens of graining and panelling; an electro-magnetic apparatus for working the block system on a railway; a model of a revolving fort; McDermid's patent paper-hanging machine; &c. The opening ceremony took place under the presidency of the Mayor of Darlington.

Fire at Westminster Bridge Station.—On Monday night a fire broke out at the booking-office of the Metropolitan District Railway Company, at their Westminster Bridge Station. The cause is at present unknown, but the fire spread very rapidly, until the whole of the wooden building was in flames. The booking clerks were able to leave the place without injury. The fire was fortunately confined to the office in which it originated, and which was almost destroyed. The exemption from the provisions of the Building Act at present enjoyed by railway companies is opposed to the public safety.

The Mansion House Terminus.—"*A Citizen*" suggests as a compromise that the Metropolitan District Railway Company should be allowed to bring their line up to the Cannon-street end of New Earl-street, making their station on the angular piece of land on the east side thereof, and bounded by Bow-lane, thus absorbing the block of buildings (a great portion of which is at present unoccupied), and which presents such an awkward break of the line of the new street. The suggestion is worth consideration.

Permanent Photographs.—Mr. Woodbury's patent for printing photographs by a permanent process, has been purchased by Mr. Vincent Brooks, of Gate-street, Lincoln's-inn-fields.

Eastbourne.—The president of the college, the Duke of Devonshire, has determined to take steps for the immediate erection of the permanent buildings. The site selected is Larkfield, on the slope of the Southdowns and near the sea. The land immediately surrounding it has been assigned to the college for cricket-field, &c. The position and soil are all that could be desired. Mr. Henry Curvey, architect to the Duke of Devonshire, will have the management of the buildings.—"The opening of the pier by Lord Edward Cavendish has taken place. The ceremony was marked by considerable pageantry, including a procession. A banquet took place in the evening, at which Lord Edward was present."

Manufacture of White Lead in America.—It is estimated that at least 40,000 tons of white lead were produced in the United States last year, and of this fully one-third by four establishments in Brooklyn. The largest corrodors works in the country are in this city. It is further estimated that about 700 tons of lead in ore were imported in 1869, and about 1,500 tons dry. The amount of pig lead consumed in the United States the same year was over 30,000 tons, nearly all of which, as we have stated, is imported. "The actual capital investment in the corrodors business alone cannot be much less than 30,000,000 dollars, and fully 5,000 hands are regularly employed. If we look at the business incidental thereto, such as grinding, colour-making, and selling, the proportions of this industry are vastly enlarged."

His Royal Highness the Prince Consort's Prize of Twenty-five Guineas.—This prize has been awarded by the Society of Arts to Edward Turner Smith, Esq., aged twenty-two, of the Southampton Albionism, clerk, who has obtained the following first-class certificates:—

- 1867, Arithmetic—First-class Certificate.
- " Political and Social Economy—First-class Certificate.
- " Literature.
- " Geography—First-class Certificate.
- " English History—First-class Certificate.
- 1868, Book-keeping—First-class Certificate.
- 1869, Book-keeping—First-class Certificate.
- 1870, Logic and Mental Science—First-class Certificate.
- 1870, Metric System—First-class Certificate.

Worcester Cathedral Restoration.—Mr. Scott (the architect) having examined the plans and revised the estimates, finds that £15,000 further expenditure will be required to complete the restoration of the cathedral. Towards this sum Lord Dudley offers £5,000, conditionally on £10,000 being raised by the city and county of Worcester. The dean and chapter, in their official capacity, will contribute £2,000, so that there will still be left £3,000 to be provided by the public, in order to be in a position to accept Lord Dudley's offer. Lord Lytton and Sir J. Pakington have made suggestions as to raising the required amount.

Another Discovery in Palestine.—An important discovery is said, by the *North German Correspondent*, to have been made at Jerusalem. It is an old stone, bearing the figure of a god sitting on a throne, with priests on both sides, and a Assyrian inscription two lines in length. It was brought from Yeznan, and was offered for sale. Dr. Oscar Meyer, the Chancellor of the North German Confederate Consulate, obtained an impression, which is at present in the hands of the Confederate Consul, Dr. Blew, who is residing for a time at Berlin. The inscription is said to contain the name of "Athar," or Astar.

Suffocation in a Well.—A labourer has been killed by foul air while being lowered into a new well in course of construction at the new asylum, Longdons, Bostwick. Water had been found at a depth of 57 ft., and for two or three days the well remained closed. The man was lowered with his foot on a rope attached to a windlass wrought by two labourers. As the apparatus cleared the bottom, these two men heard him shouting, and, as being sunk at the new asylum, Longdons, Bostwick. Water had been found at a depth of 57 ft., and for two or three days the well remained closed. The man was lowered with his foot on a rope attached to a windlass wrought by two labourers. As the apparatus cleared the bottom, these two men heard him shouting, and, as being sunk at the new asylum, Longdons, Bostwick. Water had been found at a depth of 57 ft., and for two or three days the well remained closed. The man was lowered with his foot on a rope attached to a windlass wrought by two labourers. 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The Bath and West of England Show.—The Exhibition of the Bath and West of England Society has been held at Tanton. The arts department comprises some illustrations of metal work, with reproductive copies of the more remarkable specimens from both public and private collections in this country, and other parts of Europe. The Kensington Museum contributes, as it did last year, some specimens in majolica. Several classes of pottery are included in the contribution. A portion of a case is set apart to illustrate the application of the fine arts to the chief manufactures of France. Patent Roman tiles for roofing, patent ridge tiles, and patent car tiles are exhibited on the open grounds; and Messrs. Seale & Sons, builders, Bridgwater, have erected for the exhibitors, in red and grey moulded bricks, covered with tiles, an ornamental model cattle-shed.

The Oxford Architectural Society.—An excursion to Somerset, North Aston, Steeple Aston, and Lower Heyford, has taken place. The party were received at Somerton, by Mr. Wing, of Steeple Aston, who assisted in pointing out the principal objects of interest there, and at North and Steeple Aston, where the party were received by the Rev. J. H. Brooke, the rector, who hospitably entertained them at the Rectory, and exhibited the well-known examples of the fourteenth-century needlework belonging to this church. Rossam was next visited, though the time remaining was so short as to allow of little more than a glance at the church, though the party were cordially invited to pass through the grounds of Rossam, on their way to the station.

Longhope Church.—The spire and upper part of the tower of this church have for some time past been in a dilapidated condition; the belfry floors were decayed, the bell carriages unsafe, and the bells for a long time have preserved an enforced silence. The vicar and churchwardens therefore took the matter in hand, and have placed the edifice in safety. The spire has been taken down, together with the tower to the ringing-floor; the stonework has been rebuilt, and the tower furnished with crocketed pinnacles. The work has been executed by Mr. Orzan, of Mithelenden, under the superintendence of Mr. Maberley, architect, Gloucester.

Electricity in Thrashing.—"R. T." says,—"Electricity will open and expand loose fibrous substances. The beautiful rose will purify itself. Why not the husk of corn which envelops each grain be made to open? I presume a slight application of a brush or stick would drop every grain; steam-thrashing would then be an operation of the past. I was led to form this idea by the appearance of a Blue-coat school-boy partaking of a long and strong dose of electricity; his short hair stood upright,—he resembled a young porcupine astonished at a bugbear!"

A New Gate.—A novel invention in the shape of a self-acting gate has been introduced, the construction of which is simple and ingenious. In driving up to the entrance the carriage-wheel passes over an iron, so connected by an underground rod with the hinges of the gate, that the latch end is elevated, and the top so inclined that the gate swings open by its own weight. The carriage in passing runs over a second wheel-iron, which causes the gate to close and securely latch. The movement is attended with no delay.

Electricity Utilised.—At the last exhibition of the American Institute, there was seen an elliptic lock-stitch sewing-machine, driven by a small electric engine, which might easily be put into a common hat-box. A series of eight magnets are set on the periphery of a circle, and around these revolves an armature of steel, which is continuously propelled by the magnetic action, and thus operates the machinery that moves the needle. The current may be cut off entirely, or the speed of the needle graduated as may be desired. The inventor is one Charles Gamme.

The Cost of Ink for the Public Service.—Mr. Stansfield informed Mr. Crawford that the cost of ink annually purchased for the public service was 79,616 gallons of liquid ink, and 169,392 lb. of powder ink, and the cost was £2,212. 6s. 6d. of which amount upwards of 1,500,000 worth was purchased for and paid for by India. The whole amount was supplied by a private contract.

Contemplated New Church at Elmstead, near Colchester.—On Wednesday, the 8th, a meeting of the Building Committee appointed to carry out the contemplated erection of a new church at Elmstead Market, was held at the Bowling Green Inn, in that parish. The plans of Mr. James Stansfield, of Leicester, were submitted for inspection, and accepted; the estimated cost of the church being something over 2,000l.

TENDERS.

For the erection of surgery, &c., at St. Marylebone Schools, Southall. Mr. H. Seaton Seal, architect. Quantities supplied:—
Nightingale £1,365 0 0
Bentley & Son 1,350 0 0
Manley & Rogers 1,230 0 0
Hasson 1,210 0 0
Gibson, Bros 1,274 0 0
Crabb & Vaughan 1,213 0 0
Howard (accepted) 1,180 0 0

For the erection of a house at Putney, for Mr. John Vaughan. Mr. Charles H. Goods, architect:—
Adams & Sons (accepted) £1,560 0 0

For a house and office at Tulse Hill, for Messrs. Bickett, Smith, & Co. Mr. Giff, Croydon, architect. Quantities not supplied:—
Harrell £737 0 0
Bysh 670 0 0
Cressel (accepted) 656 0 0

For the erection of a farmhouse and outbuildings at Kennel Green, for Mr. Hunkman. Mr. Robert Hutchinson, architect:—
Nutt & Co. £3,390 0 0
Bunting & Smit 2,994 0 0
Merrill 2,800 0 0
Wicks 2,500 0 0
Dowd 2,465 0 0
Hawthorn & Sons 2,710 0 0
Blease 2,960 0 0
J. & R. Whitaker 2,635 10 0
Thackeray 2,460 0 0
Dorset & Co. 2,400 0 0
Parsons & Telling 2,400 0 0
Stewart 2,400 0 0
Wicks, Bangs, & Co. 2,400 0 0
Saker 2,575 0 0
Thompson & Smith 2,277 0 0
Bowler & Baxter 2,130 0 0

For the erection of a farmhouse and outbuildings at The Hyde, Kingsbury, for Mr. Atkins. Mr. Robert Harrison, architect:—
Blease £1,700 0 0
Wicks, Bangs, & Co. 1,690 0 0
Wile 1,680 0 0
Wicks 1,540 0 0
Dowd 1,500 0 0
Harrison & Sons 1,476 0 0
Saker 1,400 0 0
Salter 1,400 0 0
Dowd 1,360 10 0
Thackeray 1,300 0 0
Dover & Co. 1,300 0 0
Wile 1,290 0 0
Wicklett 1,280 0 0
Parsons & Smith 1,240 0 0
Stewart 1,200 0 0
Parsons & Telling 1,240 0 0
Bowler & Baxter 1,150 10 0

For the erection of a house, for Mr. A. L. M. Hooker, architect. Quantities supplied:—
Anscomb (accepted) £2,418 0 0

For proposed Union-house at Winfield, Hurst, Hants. Mr. Edmund Woodbury, architect. Quantities supplied by Messrs. Welch & Atkinson:—
Brass £11,414 0 0
Hobdard 11,360 0 0
Nightingale 11,111 0 0
Hobdard 10,900 0 0
Ferry 10,900 0 0
Ferry, Brown, & Co. 10,900 0 0
Hill & Sons 10,900 0 0
Wood 10,640 0 0
Martin, Wells, & Co. 9,876 0 0
Cassell & W. W. 9,799 0 0
Sanders, F. 9,619 0 0
Hill & Sons (accepted) 9,407 0 0

For offices for the Clerk of the Peace for Kent, at Maidstone. Mr. Martin Bulmer, architect. Quantities by Mr. Geo. Buck:—
Bedford £1,540 6 0
Smith 1,361 14 0
Naylor 1,307 0 0
Armstrong 1,045 0 0
Vaughan 1,232 0 0
Aard & Abnett 1,115 0 0
Bridge 968 0 0
Solmit 960 0 0
Walls & Clements (accepted) 540 0 0

For schools at Belle Isle, Camden-road. Mr. E. M. Whitaker, architect. Quantities supplied by Mr. L. C. Ridd:—
Roberts £1,494 0 0
Williams 1,405 0 0
Higgs 1,342 0 0
Bruma & Nathall 1,450 0 0
Scribner & White 1,345 0 0

For additions to infirmary, at the workhouse, Bethel-green, for the Guardians of Bethel-green. Mr. Wm. Mundy, architect:—
Brown & Sons (accepted) £653 8 0

For repairs to thirty-seven houses, in Jefferson-street, Bromley-by-Row, for the British Empire Life Assurance Company. Mr. McDougal, architect:—
Tarrant £1,510 0 0
Bayer 1,400 0 0
Sherr 1,356 0 0
Purpoise 1,080 0 0
Storer 985 8 0
Mortley 991 12 0

For surface (pipe) drainage, Teddington, Mr. Thomas Goodchild, architect. Quantities supplied:—
Aps £208 7 4
Cole 526 2 0
Brown 610 3 0
Slender 516 0 0
Pacey 405 0 0
Voss 467 19 10
Hill 400 0 0
Keble 419 0 0
Young 601 10 0
Goodall 360 10 0
Blountfield (accepted) 388 0 0

For houses, Lansdown-road, Tottenham. Mr. T. E. Munday, architect:—
Clayton £868 9 0
Chapman 770 0 0
Linsell 710 0 0
Hannin 684 0 0
Hobdard 684 0 0
Wah 675 0 0
Nightingale 675 0 0
Hobdard 660 0 0
Humphreys & Son 660 0 0
Garrud 648 0 0
Thayer & Co. 648 0 0
Harrison & Edwards 600 0 0
Bowler & Baxter 560 10 0
Hill & Brown 571 0 0
Hobdard & Son 550 0 0
Whitaker 549 10 0
Horse & Cadell (late) 488 0 0

For chapel at Marsh, Cambridge. Mr. John Tisher, architect:—
Curwen £2,830 0 0
Nightingale 2,630 0 0
Hobdard 2,471 10 0
Hutchinson 2,325 0 0

For Cambridge Corn Exchange. Mr. W. J. Bwyer, architect:—
Bardell & Son £9,500 0 0
Fent & Waters 5,700 0 0
Thayer & Co. 5,390 0 0
Haley 6,073 0 0
Nightingale 4,759 0 0
Hill & Son 4,415 0 0
Loraday 4,374 0 0
Hobdard 4,325 0 0

For residence and stables, at Bredon, near Banbury, Oxfordshire. Mr. Thom. M. Lockwood, architect:—
Nightingale £5,781 0 0
Franklin & Sons 5,565 0 0
Munday 5,194 0 0
Claridge 4,830 0 0
Fent 4,572 0 0
Kempster 4,460 0 0
F. & S. Orchard (accepted) 4,399 0 0
Faintor 3,973 0 0

For works, Grand Junction-street, Blackfriars. Mr. A. Frazer, architect:—
Hill & Son £2,780 0 0
Myers & Sons 2,616 0 0
Barnett 2,260 0 0
Hobdard & Son 2,226 0 0
Hansley 2,215 0 0
Fut 2,190 0 0
Wagner & Rogers 2,186 0 0
Bwyer 2,100 0 0
Nightingale 2,063 0 0
Farnes & Fotheringham 1,990 0 0
Foster 1,943 0 0
Kunor 1,906 0 0

For rebuilding house and shop, No. 29, High-street, Hampstead, for Mr. Harman. Mr. J. C. De la Haye, architect:—
Hill & Sons £1,414 0 0
Bentley & White 1,206 0 0
Manley & Rogers 1,277 0 0

For alterations and additions to Bromley Workhouse, at Longbridge, Bromley, Kent. Mr. W. W. Water, architect. Quantities supplied by Messrs. Lansell & Giffard:—
Hobdard £5,000 0 0
Kempster 4,860 0 0
Garrett 4,746 0 0
Fent & Co. 4,386 0 0
Crabb & Vaughan 4,800 0 0
Armand 4,990 0 0
Gill 4,720 0 0
Henshaw 4,653 0 0
Hill, Kedell, & Waldram 4,610 0 0
Collett 4,677 0 0

For St. Michael and All Angels' Mission Schools and residence, Woodwich. Mr. J. W. F. Seagrove, architect. Quantities supplied by Mr. W. F. Seagrove:—
Myers £2,420 0 0
Woodford 2,413 10 8
Dove, Bros. 2,476 0 0
Barnley & Rogers 2,467 0 0
Winship 2,230 0 0
Shepherd 2,190 0 0

For stabling, coach-house, &c., at St. Alban's, Herts, for Mr. Thos. Paget. Messrs. Henry Jarvis & Son, architects:—
Tarrant £1,061 0 0
Makin 1,067 0 0
Thompson 1,060 0 0
Henshaw 1,047 0 0
Hobdard 1,146 0 0
Garrison & Son 1,265 0 0
Richardson 1,169 0 0

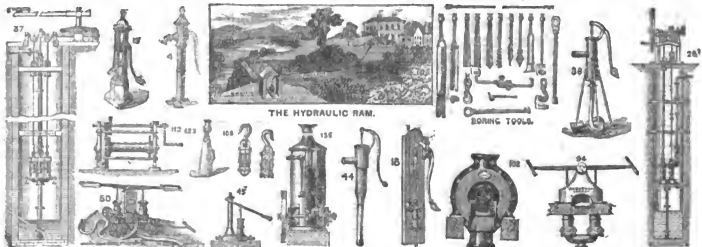
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30. Portable Pumps, on Stand, with Flexible Suction.
103. Bernay's Patent Improved Centrifugal Pumps, of all Sizes.
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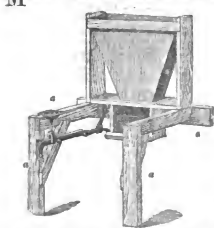
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1867. CLASS IV.
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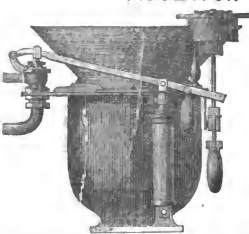
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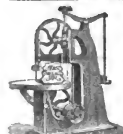
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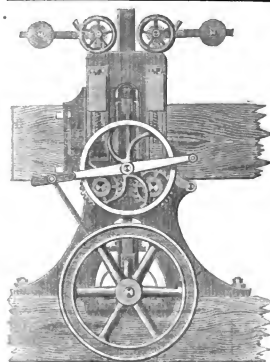
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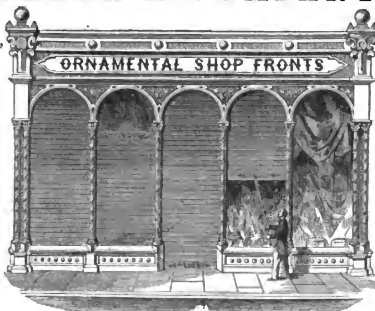
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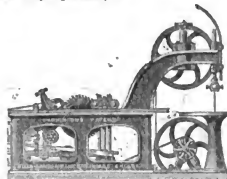
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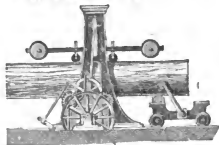
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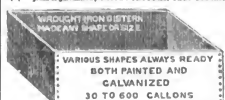
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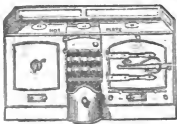


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The Builder.

VOL. XXVIII.—No. 1429.

Bad Building.



ARMED, shelter, light, ventilation, internal division and fitting, water supply, and sewerage,—such are the chief requisites of a dwelling-house. Health, comfort, decency, are the objects which the builder should ever set before him. In the

absence of intelligent care for these things the cot of the labourer degenerates to the level of the wigwag of the savage, or the lair of the wild beast. It can bear no comparison, as an architectural product, with the pendent nest of the weaver-bird.

Beyond these, which may be the result of mere building, we want æsthetic propriety. A dwelling-house, architecturally designed, should not only fail to offend the eye by its ungraceful lines, or its unredressed poverty of surface, but it should give a sense of pleasure to the intelligent observer. It should afford evidence of thought, of skill, and of good taste. It should act as an educational element in the life of its occupants. It should, by silent contrast, condemn all that is sordid, squalid, and makeshift. It should be such a building as it would be impossible to mistake for a magnified pig-stye.

It is possible that a more steady and successful attention might have been given to these great requirements of domestic architecture, but for the weight of another consideration, which few can safely neglect. Cheapness is unfortunately a most important desideratum. So much is this the case that, like Aaron's rod, its voracious energy too often devours all the rival elements. "Learn to build cheap: all earthly graces will follow in their proper places," or, if they do not follow, so much the worse for them. Such might be the motto inscribed (it is inscribed for those who know how to read it), on many of our modern groups of houses.

We speak, on the present occasion, almost exclusively of the dwellings of the poor. For them, necessarily, economy of construction is a leading element. Luxury or ornamentation would be out of place. It could only be at the expense of some more valuable requisites. And yet it is in this very class of buildings that the moral teaching of architectural propriety is most important. If we regard, as we should do, the architect as a silent but yet eloquent moral teacher, it is precisely his very poorest clients who have the most need of his ennobling lessons.

In old time the architect spoke to the poor man with a voice louder and more melodious than any that echoed from the pulpit. He reared before his eyes the House of God. He pointed his thoughts towards heaven, by a graceful and lofty

spire. He hung in the air above him towers rich in clustered tabernacle-work, or pierced with luminous tracery. He arched over head a miniature resemblance of the firmament, which seemed to be a solid crystal vault, spangled with shining stars. He clustered his shafts, and shot out his fan-shaped groins, in emulation of the natural net-work of the forest. He pierced his solid walls with slenderly-mulioned windows, till the white transmitted light became intolerable to the work-shippers. Then, in defence of his art, he called on the glass-worker to emulate the craft of the painter. He subdued the unwelcome glare by grisaille, by yellow stain, by all the heraldic pomp and historic glory of purple, and crimson, and green, and azure. And thus, in stone and in glass, he wrought out many a noble poem, which stirred the hearts of those who were altogether unable to spell out the language in which it was made immortal.

In considering the past and the present position of architecture, it should not be forgotten that we are unable to distinguish how much of the effect of ancient architecture is due to the very element of age. There can be no doubt that antiquity, as such, has its distinct effect upon the imagination. In reading the poems, in studying the art, in admiring the architecture, of our predecessors, we revert to the cradle of our own thoughts. The voice of the past is always poetic, even when it is no longer considered to be musical. It is so because it is always more general, more allusive, more allegorical, than contemporary speech. With the descent of mankind, and with the increase of knowledge, language becomes more precise, more scientific, and less poetical, generation after generation. What is the case with language is the case with all the expressions of human thought. And thus a cathedral of the fourteenth century, or a castle of yet earlier date is surrounded by a mythical halo which no contemporary building can wear to our eyes, although it may, long hereafter, to those of our descendants.

While, then, we feel bound to acknowledge with some satisfaction the change which the last quarter of a century has seen effected with regard to our views as to contemporary ecclesiastical architecture, and even as to taste in buildings in general, whether in streets or in country localities, we anticipate but little educational advantage from this influence. With but few illustrious exceptions, our architects themselves are too uninterested in the history and in the capabilities of their art to make it a vehicle of elevated moral culture. For the most part they are paralyzed by the spells of the demon of cheapness. A pernicious substitute for the golden rule has been introduced in our time. It has not yet been inscribed in copy-books, or stuck up in our houses in spider-legged little oak frames, blazoned in ill-conditioned church text; but it is made by many the rule of life, notwithstanding. It is the gospel of some men in high places; or, at least, it is the formula by aid of which they clench to the seats which they so long and so bitterly envied. It is the maxim to buy cheap and sell dear. That is the golden rule. Much good it has wrought us.

But, leaving aside the question of the æsthetic proper, let us look at that which lies before us at the present day. If economy banishes ornamentation, there is yet left for us the beauty of well-adapted structures. Everything that is well done has a beauty of its own. The cheap is not necessarily the nasty. On the contrary, by the time that the play is played out, it will appear that the nasty is never really cheap.

It should be observed, in passing, that, under our present social condition, economy is as it were double-distilled. It is raised far above proof; its effect is intensified and aggravated by the different steps which intervene between the desire, on the part of a landholder, to build a

house, and the completion of the house on which he decides. But the future proprietor has to count his own cost. He has to decide on how much he can spend,—to reckon what return he may fairly hope to receive for his outlay. So far we hear nothing but the voice of prudence. The unwisdom of the man who began to build, and had not wherewithal to finish, is matter of moral statistics from the time when people were accustomed to dwell very contentedly in tents. So far, then, so good.

For the next step comes in one of the improvements, if such they are, of later times. Our friend has decided to build—let us say—a dozen cottages for his farm labourers or his factory-men. He is prepared to lay out so much money for the purpose. Will that be enough? he asks. Quite enough, is the reply.—How shall I be sure of that? Nothing more simple. Contract with a builder, and the thing is done.—So far, again, so good. There is no doubt that a practised builder will tender, for a given sum, to erect a much more substantial and ornamental set of buildings than the capitalist would obtain if he had to go himself into the market for materials and to superintend the activity of his workmen. Thus far, again, we hear nothing but the voice of prudence.

But the next step goes rather aside from the straight path. The capitalist is not content with getting value for his money; he wants to get the outside value,—the uttermost farthing; therefore, instead of selecting a tradesman of unimpeachable character, and quietly arranging with him the terms of an equal and just contract, he advertises for tenders. In they come, by the dozen. The best man stands aside in disgust; the second-best man tenders a trifle cheaper than he fairly ought to do, for the sake of obtaining employment. How about the third-best and the fourth-best, and those following after him? How about the thoroughly reckless scamp? Why, in sober fairness, unless the advertiser gives notice that he will not hold himself bound to accept the lowest tender, the scamp, if he can produce the security of other scamps like himself, will have a right to the contract. The proprietor saves 15 or 20 per cent. on paper. He becomes the unenviable owner of buildings that are worth nothing. Economy peeps out of every hole and every crevice, and laughs at him to his face. The foundations are on the slip; the bricks are misshapen; the timber is sappy and unseasoned; the paint blotches and blisters; the glass distorts the external prospect into a worse than Chinese perspective. An army of rats ascends from the untrapped drain-pipes. The slater's footmarks leave dribble-holes for the rain, always in that part of the roof against which the wind beats most fiercely. The chimneys are so roughly finished as at once to smoke, to draw downwards instead of upwards, and to collect volumes of soot for discharge into the rooms at inappropriate times. No door closes; no bell rings; no lock shoots. Water-pipes are afflicted with dropsy, and exude unwholesome damps; ill-made plaster comes off in patches; gas, if gas be laid on, pervades and permeates every room. Conversation in the kitchen, varied to a sharper key than is pleasant by some of those agreeable incidents, becomes distinctly audible in the sitting-room, or wakes the baby, to add to the din, and the inhabitant bewails the day on which he was beguiled, by an offered economy of a few pounds of annual rent, to inhabit a cheap house.

We have spoken of but one out of the many sources of wretched work in building. We have referred to the master-scamp alone, to the cutting contractor,—needy or unprincipled, as the case may be. But we must remember that like takes to like. The master-scamp has an unfailing tendency to surround himself with other scamps, each more hungry, more inefficient, more cutting than himself. The timber mar-

chant must live, so must the bricklayer, so the painter, the plumber, and the glazier, the ironmonger, and so on. Hear what a working man, or at least a representative and good friend of the working man, says on this point. Says Mr. G. Shipton, the secretary to the Amalgamated Society of House Decorators, "From these combined elements of evil there arises another most deadly and pernicious in the extreme. I mean the class of needy unprincipled employers who have sprung into existence and infest our trade, simply because to an employer it is excessively remunerative. Thus any person having a few pounds to start business commences in obtaining, by peculiar means, and underhand methods well known in the trade, the services of the servants to some gentleman, and in the first place by cleaning the windows, slopping out basements, washing paint, doing coat-work, &c., and by making themselves generally useful for any purpose, finally obtain the work to be done in the grand staircase, dining-hall, and even drawing-rooms."

humble and respectable firms, by further reducing the required skill, education, and judgment to conduct good work down to a base level within the scope of the meanest intellect, give fresh opportunities to the needy employers to compete against them, and by their underhanded influences of course more successfully, and still further demoralise the taste of the public.

Against a state of things thus eloquently described in the language of truth, it is, indeed, time to make a stand. And the one feature of the case which tends to give most direction to the results of effort in the right direction is the utter want of any real standard of value, indeed, is of things more precious than gold or silver. Health, comfort, brain power,—the great elements at once of individual well-being and of national wealth—are squandered by that neglect of the laws of honesty and of common sense which is so evident in the greater number of our trades and professions.

In this, as in all other cases which demand reform, the first thing is to obtain full, accurate, and appropriate information. To compel the builder to erect houses fit for human habitation, we must teach the occupants what careful skill can really place within their grasp. Something has been done, and is being, in this respect, among ourselves. But it is to the French neighbours that we owe the most valuable and most accessible information on the subject of the elements of industrial building that shall be at once reasonably cheap and reasonably good. Attention has been turned to the subject in Paris for years systematically than in London. The Emperor of the French, not content with the transformation of picturesque, old, narrow Paris, into its present costly magnificence, has tried his own hand as a poor man's architect. The taste, however, of one rank of life is rarely that of another. Habits differ with the difference of habitual occupation, and the requirements of the wage class, the small tradesman, and the more freely-spending folk of the lower and middle classes differ much as do those of men of different nations. Thus the Emperor's home for the poor man is not altogether to the poor man's taste. He will be his own architect. He thinks that he knows far better what will suit him in the matter of thought of the considerate occupant of the Tuilleries can enable H. I. M. to arrive at. With universal good sense and good taste the Imperial architect has endeavoured to accommodate his poor brother. If the latter has a plan to suggest, it shall, at all events, be tried. We have no space at the present moment to enter into the details of this most honourable and interesting competition, but we propose to give full information to our readers on a future occasion.

Reverting, then, to the considerations with which we commenced, let us summarise those qualities which are demanded for the seven requisites of even the humblest human dwelling.

First, as to shelter. It is requisite that walls and roof, doors and windows, should be not only weather-tight, proof against pouring or drifting rain and violent gusts of wind, but further that they should be bad conductors of heat, so as to avoid chill and save fuel in winter, and keep out the sultry heat in summer. Further, they should be non-absorbent and washable, both within and without. The sanitary importance of this requisite is of the very utmost degree.

For light, it is necessary for health, and especially necessary for the successful rearing

of children (unless the poor creatures are to be given the key of the streets), that the windows should be of proportionate size, glazed with fair glass, and that the house should be so arranged with regard to them as to avoid dark nooks and corners, which are too apt to become the seed-plots of disease. Nor can we hesitate to deplore the economy which fails to complete the window especially in the sleeping-room, with a solid wooden shutter.

Warmth and ventilation are intimately connected, although, in our present state of building, they are regarded as antagonistic. In even the bestmost sort of English houses ventilation is for the most part only effected in violation of the laws of nature, and by the use of doors and windows. The subject is of the utmost sanitary importance. The introduction of fines for the admission of air, which may, by a proper arrangement, be warmed in its passage, enter the rooms at an adequate temperature, and escape laden with the products of respiration as well as of combustion, ought to be made less imperative. Our wasteful open fires, our ill-built chimneys, and our ill-constructed grates and stoves, are all so many premiums for dirt, waste, and discomfort. Intelligent precaution would entirely alter this portion of our domestic arrangements.

The internal divisions and fittings of a house exercise much influence on social welfare and happiness. Due separation of the sleeping from the living apartments, and of both from the accommodations for cooking and for cleanliness, are essential. Nothing can tend more to break down the instinct of modesty, and to lower and degrade the daily life, than the want of such a separation. Again, proper closets or cupboards, distinctly fitted for the well-known and universal requirements of cottage life, are requisite for tidiness, cleanliness, and comfort. At the same time they must be so constructed as to be readily thrown open to the light. Dark, crooked, unget-at-able nooks must be avoided, as seats of dirt and of vermin, and of the insupportable character of every fitting must be borne in mind. All absorbent matters, in small or densely-packed houses, more especially, have a special faculty for imbibing miasma, evil odours, and the seeds of disease of all kinds, and for giving them freely forth without losing the power of continued reabsorption. Musty, rancid, and noxious furniture, may be saved by due provision being made by the builder for the universal wants of the occupants.

As to water-supply and sewerage, the conditions of the town and country cottage may widely differ. For the latter, the main point may be to regard the purity of the well, and to consider how far the existing system can be satisfactorily applied. For the former it is important to avoid lead pipes, cisterns, or fittings. The principle of constant supply, with a protection against waste by the use of pipes of a very small bore, should be regarded as essential. And for the sewerage the importance of depending upon the regular action of a fixed supply of water, which is under the control of the engineer, and of carrying off by surface or other proper drains the irregular floods caused by the uncontrollable rainfall, and avoiding the undue dilution of unavoidable manure, should never be lost sight of. The mere fact of realising the convenience and comfort, and of keeping their attainment constantly in view, would tend, more than almost anything else, to the improvement of the future dwellings of our industrial classes.

HERMIC ARCHITECTURE: THE PALACE OF ULYSSES.*

THE position of a *thalamos* of Penelope on a level with and just beyond the *megaron*, explains how she overbears all the treacherous craft of the suitors ever their cups in the "*megara* [here plural] of the men." It seems to be in this same lower *thalamos* that while she is in private discourse with Eumæus and her maidervants (xvii, 511) she hears from the *megaron* the well-omened echoing sneeze of her son. It is not inconsistent with this that in the first book she hears the song of the harping Phœbus perfectly from her upper apartment (i, 329).

In the twenty-first book it is certainly from the *thalamos* where she has been within earshot of the suitors (xx, 387) that she proceeds by

the lofty stair (*climas*) of her domos (xvi, 6) to "ascend to her" most secluded chamber (*thalamos arch. (tes)* with the oaken threshold" (*thalamos eudon*), a moulment-room and treasury, and brings away the bow of her absent lord,—the power to be which she proposes to her suitors,—so will also yet once again play with and deceive them, as she has so often done, by her future husband.

The father and son, in anticipation of their desperate enterprise, have already, after the departure of the suitors for the night, removed all arms from the walls of the *megaron*, where they have been hanging ever since the departure of Ulysses for Troy. The sword, or saw rather, however, carried by Eurycleia, the nurse,—the women who have to clear up in the hall, in the *megara*—here equivalent to the women's apartments beyond the stone threshold—*the shots* (locks) the doors of the "*megara*, well inhabited," while the pair carry in—it does not at present appear distinctly where, but clearly into some apartment accessible from the *megaron*—the helmets, shields, and swords. At once, as if given light to the work, carrying a golden lamp and lightens all the place—(xix, 97)—"the walls of the *megara*, the beautiful meadallies (frames of the panels?) the pine beams and lofty columns;" and this is the most detailed statement we have of the constructional members of the apartments. The doors, however, are not to be removed; but in constant charge of Karyoleia is mentioned in the second book, where Telemachus descends into the broad, high-roofed *thalamos* of his father—a cellar, therefore—from what part of the house does not appear; but doubtless and naturally beyond the *megaron*, as he has to await his mother's return, and as important as removing stores (ii, 355). Wine and oil are here stored away, with chests of raiment (*νῆπις*), gold, and brass. Then we have notice of the mills where the women ground the corn, not remote from the *megaron*.

The test of the bow is to consist, not merely in power to string it, but also in using it with ease and dexterity as to shoot an arrow through a series of twelve iron instruments—they are called axes (*μυλῖνες*),—set upright in the ground. What might be the form of these otherwise—the female attendants of the Queen bring them down in a case (*γυνος*), (xi, 61)—it is not easy to guess, and at present does not matter. The responsibility of the arrows, however, the *megara* plants them daily upright, in one accurately straight trench, and presses down the earth about them (xii, 122). He then stands upon the threshold and attempts, or pretends to attempt, to bend the bow. We learn afterwards that they were set up within the limits of the palace (xii, 202)—the *megaron* of Ulysses, as we are told, as if the bow were to be used as a test of the strength required; and it would seem that it must have been the threshold of communication between this and the *megaron*—the *melinos eudon*—upon which the attempting archer took his stand. Otherwise, from the *talmas eudon*, he would have a longer shot by length of *megaron*, but to shoot through the opposite door.

At a sign from his father, he lays it aside, just as he could have succeeded. The suitors all try in vain, proceeding (*ἰνδία*) from the position of the *crater*, or mixing vessel; and as the wine circulates—not from right to left, as passed from left to another by moderns, but from right to right, as ordered by the gods, the distance of the ancient feast. In vain they endeavour to render the weapon more flexible by anointing it with fat melted at a fire they have lighted on the spot (*ἰνι πυρρός*). While they are thus fruitfully employed, the ethered Philœia and swineherd Eumæus quit the *oikos*; Ulysses also goes out of the house, the distance of the phrase is noticeable, and as soon as they are outside the portals of the *oikos* he reveals himself to them—tested before,—certifies his identity by a scar, and claims their loyal and zealous aid. Eumæus is instructed, in case of any objection on the part of the suitors, to place the bow in the hands of the stranger; then to order the women to fasten the doors of the *megaron*, cutting off so the connection between the *megaron* and the *thalamos* behind by closing the doors on the threshold where Penelope so often had appeared, and by closing which Eurycleia had already before extended the women, and to keep within and quiet, whatever distance they were to bear in the enclosures of the men (*ἀνδρῶν ὑπὸ πύλαις* = *ὑπὸ πύλαις* = *ἀνδρῶν*). Philottos, at the same time, is to lock and secure the main outer portal of the *oikos*, which he does, as we have

* See p. 238, ante.

seen, with a ship's spar. All this is accurately performed. Penelope, in the mean time, having retired, on the junction of her son, at the height of altercation with the suitors, who are indignant at the suggestion which she favors, as well as Telemachus, that they should be brought into competition with a beggar, albeit he would be excluded from the prize. The queen retires to her upper chamber, to be speedily sent to sleep by Athena. Throughout this scene, as previously, Homer adjusts her conduct, and expressions with such delicate delicacy that all is perfectly natural; yet the reader knows as little as Ulysses can know, whether (*κρίνω*) Penelope suspects or believes the beggar to be her husband, knows not whether to believe or suspect it, or has no thought whatever on the point.

Ulysses strings the bow with ease, twangs it as a lyrist at a new string, and, seated as he is, sends an arrow through the steel's nocking. The position of his seat, we have been told (ix. 258), Telemachus had now assigned him, a proper, but modest seat, within the megaron, and by the *laínos oúdos*, thus opposite the door between the megaron and aule. Telemachus, at a signal, seizes sword and spear, and takes his place beside the *thrónos* of his father, who, stripping off his rage, leaps to the great threshold (*αὐτὴν ὁρῶν*) (xi. 1), which implies—as this threshold is called the *meléthos*—that he traverses the megaron; he shakes out the arrows from the quiver before his feet, and launches the next into the throat of the chief offender among the suitors, Antinous. The slaughter so commenced proceeds apace. The victims turn to the walls for arms, only to find them stripped and bare, draw their swords, seize the tables as shields, and encounter each other to force by a rush their ruthless enemy from "the threshold and the doors." Every arrow carries a life; but in anticipation of their exhaustion Telemachus seeks arms for themselves and the pair of servants in the *thalamos*, where his weapons were deposited (xii. 109), and so the four stood armed with helmet, spear, and shield. This thalamos must either be the same as his sleeping apartment, or, at least, lie that connected with a set that could be entered from the *aule* (l. 425), and therefore at the command of those who held the threshold intermediate between *aule* and megaron; it appears, indeed, by what follows, to be the same to which the night before they had transferred the arms from the megaron.

From the megaron there was no other exit save by the *ostrothron*, "in the wall built wall" (xii. 120), the sequel shows, at the *entree* end of the apartment; and by "the extremity of the threshold of the well-bayed megaron," the threshold occupied by Ulysses, there was a way or passage into a lane (*ὁδὸς ἢ λάνθρον*) apparently external to the palace, secured by well-fitted folding-doors (*ανδύεις*). One entor proposed to ascend by this sallport (Why ascend?—was the megaron lower level than the *aule*? This could scarcely be), and give the alarm to the people without; but the attempt is renounced because "the fair portals—*θύραι*—of the *aule* are very contiguous, and the month of passage (*εἴσοδος λαύρη*) so confined, that one resolute man could there obstruct any number." Ulysses, indeed, has placed the swine-herd on the spot to watch the passage—*δοῦρ* (xii. 120).

The passage to which this *ostrothron* admits will be consistently interpreted as a service passage between the wall of the megaron and external wall, issuing into the *aule* by a passage, and into an outer lane, by a door near the end of it.

Melanthis, the ill-conditioned and disloyal go-between, who is with the suitors, as he has advised their worst courses all along, succeeds by the *ostrothron* to the *thalamos*, where he has divined that Ulysses and Telemachus had deposited the arms, and thence brings supply to the still surviving suitors. This *thalamos* was thus on an upper story reached from the service passage mentioned. It is described as *ἐν τῇ πόρτῃ μύραρον* (xii. 143).

This disaster, a consequence of the negligence of Telemachus; he owns that he had left the door ajar, "we presume when he brought the arm thence very shortly before. He now bids Eumæus "to close the door of the *thalamos*, and observe who is the traitor, Melanthis or one of the women."

This suggestion that the women who have been excluded by the closed doors at the stone threshold may still have supplied the arms implies that the service passage had, as is

reasonable, communication with the women's department beyond the megaron. This, in fact, gave the indispensable access not only to the *aule* and its main door, without traversing the megaron, but also admitted the household, when necessary, to such a *thalamos* as that where the arms were deposited, and also to others on this side. Thus it was that Ulysses, sleeping in the prodomos, had an opportunity of seeing with indignation the women-servants going out to join the suitors, their paramours. In the first book the chamber of Telemachus is described as "a *thalamos* of the very beautiful aule, built lofty, in a position conspicuous, or rather affording a general overlook." The description implies that it is accessible from the *aule*; and the attendance of Euryaleia, that it is so also from the women's side. The instruction to fasten the *thalamos* has to be deferred; but Eumæus catches sight of Melanthis, who he possibly might from the further end of the passage, and reports. Ulysses undertakes with his son to confine the suitors to the megaron, while Eumæus and Philoitios proceed to the *thalamos*. Melanthis is already searching the recesses,—the *muchos*—of the *thalamos* for arms, when the two herds take post, one on either side of the entrance by the *stathmos* or door-posts: as he comes out laden they start forth, seize, and drag him by the hair into the *thalamos*, throw him down, draw back feet and hands, and strap them together; then, looping him with a rope, draw him to the top of a high column close to the rafters or beams. The rope seems to be thrown over a beam that extends from one column to another, or from wall to column.

The herdsmen then arm themselves,—had they for this merely gymnastic exploit taken off the suitors, which we have seen them already equipped—"close the chining door."—(the same phrase 201, as at v. 156),—and rejoice the prince.

The fight recommences. Athena, for a few moments in the form of Mentor, stimulates Ulysses, and then flies upwards in form of a swallow, and perches on the *metathron* (*αἰθρὰ δόρυς μύραρον*) (xii. 239),—properly the beam bleached by smoke of hall fire,—and hence commences the like harash, as an aviator of hospitable house, and here at least implying a covered roof, with escape for the smoke.

The suitors in vain discharge spears,—six of them together,—at Ulysses alone, in position at "the first doors" (*ἐν τῇ πρώτῃ θύρῃ*), (xii. 250), a new title for the doors between megaron and *aule*. Minerva made all efficient and failing,—one after the door post, and the door post, another the wall. Every spear returned by the party of Ulysses is fatal, and the rest retire to the recess or extremity,—the *muchos* of the megaron (270). The same into-change is repeated, and with the same marvellous and unequal results. Then Ulysses and his son close with their opponents; the goddess on high from the roof (*ὀψέει* ἢ *ὀπρῶν*) (298), the roof that she displays the maddened rage, they scatter and fly like a herd maddened by the crisis, and are slaughtered in all directions (*κατὰ δόρυ*) about the hall.

Phemius, the minstrel, and Medon, the herald, both guiltless, and only consorting with the suitors under compulsion, are spared. Phemius had stood still holding his lyre, close by the *ostrothron*, hesitating whether he should fly or stand;—evidently by the *ostrothron*,—and sit by the side of Great Jove Heracles,—that is in the *aule*,—or embrace the knees of Ulysses. He decides for the last, and setting down,—still carefully,—his lyre between the crater,—that this is one in a certain position at the extremity of the megaron we learn from xx. 146, and a *thrónos*, the seat of a great god, and so it is an interesting for him, and also for Medon, if still unalain. Medon creeps out from his hiding-place under the *ra* (*πρόσθρον*) hide of an ox. Ulysses loughs—a little, we suppose, at the figure he makes,—and bids both go forth from the *μύραρον*,—now in the place, *θῆκα*,—through the door, and sit in the *aule*; there, accordingly, they take seat by the side of Great Jove, gazing every way, expecting death to come (xii. 378).

The chamber searched through and every suitor found to be slain, Telemachus shakes the door of the megaron to signal Euryaleia (364), who opens it and sees Ulysses, bloody from head to foot among the slain, like a lion after feasting on an ox.

At command, she summons the female servants, who enter a total of fifty *ε*—who have intermingled with the suitors and disgraced and insulted her authority and Penelope. These

first, under compulsion, carry forth the dead and place them under the aithousa of the well-fenced *aule*, "pressing on one another" to relieve the weight of their burdens (v. 387), by the doors of the *aule* (*κρίν*), and, with water and sponges cleanse the seats and tables. Telemachus, with the two herdsmen, scrapes the floor (*δαπέδον*) of the well-wrought room (*πᾶσα τοῦτο δάπεδο*) with bores (*κίρπον*);—there is no decisive hint whether the floor was paved or of wood,—and the women carried away the dirt and deposited it without (*ῥίπν*). When all has been sent in order, the distressed girls are taken out of the megaron and confined in a narrow space whence there was no escape, between the *tholos* and the fence of the *aule*; there Telemachus, varying from his father's instruction to slaughter them with the sword, declares that it is by no clean death that the lives shall be taken who have insulted his dignity—his mother—and comforted the suitors, and with the cable of a ship—fitting it to lofty columns of the *tholos*—he drew them up and hanged them all. "Noces were round the necks of all of them that they might most miserably die, and they quivered their feet for a time—a very short time indeed" (xii. 470). We may probably be justified in inferring from the reference to an noxious death,—or if this means no more than privation of what semblance of honour there is in death by the sword, from the name and position of the *tholos*,—that it represents the place of accommodation necessary even to palaces.

Lastly, Melanthis is brought forth by the *prothyron* and *aule* (474)—by the prothyron and then to the *aule*—that is, by that portion of the aithousa of the *aule* that formed the prothyron of the megaron. There he suffers the cruel mutilations that too much resemble modern vengeance of kings—the execution of Babbington, or of Colonel Harrison, or even of rebels of the '45 on Kennington common (*κρίνω* ἢ *ῥίπν*) (479). The work is complete, and the work done; sulphur, "of ill the remedy" (481),—sulphur and fire are brought to purify the megaron and *aule* (494), and so all prepared for general recognition by his household,—the other women admitted at once are at once effaced in confiding joy and congratulation—and above all by Penelope, who, more collected, more wary, more wise, withholds her full recognition from the basely-clothed and, indeed, metamorphosed husband, is not convinced by the sign of the scar, which she knows by hearsay from Euryaleia, and then only flies into his arms when, fresh from the bath, re-clothed, restored to proper majesty by Athena, he responds to her challenge, and reveals his knowledge of their common secret, the concealed construction of the bed which he himself, in building his *thalamos*, had made an absolute fixture, working it into and into the wall, so that was getting and rooted in the earth when he commenced, and that he left so until he had entirely closed and covered in his chamber.

CONCERNING LUNATIC ASYLUMS.

In conformity with the general custom of the heads of the various structural departments of the public service to outline the chief requisites in the classes of buildings over which they preside, the Commissioners in Lunacy now distribute a pamphlet of suggestions and instructions likely to be useful to those about to build or remodel lunatic asylums. Besides their own long list of recommendations concerning sites, construction, arrangements, and plans, they make an accompanying gift of a second pamphlet of suggestions relating to the sewerage, drainage, and water supply, drawn up for them by Mr. Rawlinson. Persons in quest of information as to what a lunatic asylum should be like in its structural arrangements, have now, consequently, official general guidance on many points; and those in charge of such establishments may find many lines of instruction that they can make of good account.

And what are the official requisites in a lunatic asylum in the year 1870? Several of them are merely sanitary precautions that every architect would take on building a gentleman's house. In the choice of site, for instance, the suggestions are those that an architect would advise for any considerable residence. But in the other half there are instructions with which it is imperative to be specially acquainted. Every four patients should have, the Commissioners stipulate, not less than an acre of land,

if practicable, to afford them means for agricultural employment, exercise, and recreation; these acres should lie to the south of the asylum; that they may be in the sun and not in the shade of it. Again, the location should be within easy access by railway or other public conveyance for the convenience of friends visiting the patients, and for the supply of stores; and not more than three miles from a town, so as to be able to take advantage of the water and gas supplied to it, taking care, however, that the grounds are not overlooked by the houses or even cars surrounded by public walks. Forty gallons of water per patient per diem, are considered sufficient; but the quality must be good, and ascertained by analysis, and the materials used for pipes and cisterns determined by the information yielded by it.

In considering the accommodation required indoors, architects may reckon that, out of every hundred patients, fifteen will be sick, twenty will be recent and acute cases, requiring also special provision, and sixty-five ordinary working, quiet, and chronic cases. There must be infirmaries for the sick; small reception-wards for newly-admitted patients, whilst their cases are under medical or nursing observation; and with single rooms adjoining for special care of suicidal and epileptic patients; and accommodation for at least three classes of ordinary male and female patients, with their attendants. Three stories in the building are not objected to, provided the uppermost story be set apart for sleeping accommodation, and the others be as far as possible, kept on the ground floor, in the southern aspect; and all offices, store-rooms, committee-room, visitors' rooms, and porter's room and entrance kept on the northern side. Cottages or other simple buildings are considered desirable for working patients of both sexes; those for women to be near the chapel, and those for men near the workshops and farm buildings. The chief buildings destined for general use, such as the chapel, dining-hall, kitchen, scullery, laundry, workshops, and store-rooms, should be made at the first large enough to meet a possible increase in the number of patients. The hospital may be isolated, indeed, should be so, but the dining-hall must be near the kitchen, and, at the same time, available for amusements.

Coming to the actual arrangements for the every-day life of general patients, the Commissioners suggest that every ward should have a day-room on the ground floor for aged, infirm, and excited patients especially, of not less than 40 ft. superficial dimensions for each patient, unless there be wide corridors, of more than 10 ft. in width, when the 40 superficial feet may be made up between the two. The associated dormitories must contain 56 ft. superficial for each patient, and the separate sleeping-rooms 33 superficial feet, and for the sick, the sick should allow rather more breathing space; and rooms intended for the sick to sleep in should have one-third more cubical contents than others. Each infirmary must be provided with a small kitchen, with a cooking-store; and there is yet one more requisite for the unfortunate sick. Each division of the establishment must have a mortuary, consisting of two rooms, easily accessible from the infirmaries.

The officers' residences are duly cared for. The medical superintendent must have good accommodation either in a central part of the asylum, or near enough to it to be connected by a covered way, with a kitchen, and a domestic office for his use. The assistant medical officer, the steward, matron, and chief attendants must have suitable apartments of moderate extent placed near the chief scenes of their duties, without, however, private kitchens. The domestic servants are associated with such patients who work in the kitchen.

The staircases are so arranged to be so placed that the medical officers and attendants need not retrace their steps to get from one ward to another. There should be no windows to the stairs, or long flights, or well, or other facilities for suicides or accidents.

Horizontal and lateral fire-proof construction. The chimneys, flues, and drains should be adapted wherever practicable; but any flues that the floors next below the roof in those parts of an asylum occupied by the patients should be made of incombustible materials; the floors of other sleeping-rooms, day-rooms, and corridors to be of oak, or yellow deal, that they may be cleaned by dry rubbing. The walls may be plastered, or lined with pressed bricks, at option.

Lavatories, with a bath, and water-closets in

proportion of one to every ten patients, are required for every ward.

The precautions officially preferred for effecting ventilation are first taken from the rooms and corridors into horizontal channels, communicating with a perpendicular shaft, where the foul air is to be carried away by the aid of rarefaction, contrived in a fireproof chamber. The official mind contemplates the possibility of building the ventilating flues of inflammable materials, and stipulates that when they are made of brick, they should be plastered, and coated and plastered,—they should be kept at least 20 ft. from any furnace, smoke-flue, or shaft; this intermediate distance to be of fire-proof materials. Smoke-flues carried up through any of the main walls are required to have a hollow space round them, to prevent the transmission of heat from them.

In the matter of the disposal of the sewage, it is suggested that it should be distributed by gravitation in a fresh state over the land. And for the best mode of doing this, the Commissioners refer inquirers to Mr. Rawlinson's instructions, which, as we have indicated, they will give in their own. On turning to these, we find a complete treatise on the subject, and every step that should be taken to ensure the thorough working of his system, but points out imperfect ways of carrying it out that would utterly frustrate its simple mode of action, and the dangers that are possible to be met with in its execution, with the best means of guarding against them. The path of his instructions, concerning sewerage, however, comes to the familiar:—

Main sewers, of commensurate size, should be laid out in straight lines and true gradients from and to well-considered points, without the use of right angles, with ventilated manholes, and such other venting arrangements at each principal change of line and gradient. Where earthenware pipes are used it is well to line the trench in which they are laid with clay puddle, and to see that the joints are water-tight, and in sandy soils impervious to sand. When brick sewers are used they should be made of bricks moulded to the radii, and set in hydraulic mortar, or in cement. Sewers are then to be of equal or unequal dimensions, at all junctions and curves should have extra falls. Drains should not enter buildings, nor be ventilated into floors within buildings. Surface inlets to all pipe drains should be protected; and sewer outlets should have the same care taken to prevent wind blowing into the drains, or driving sewage back. The form of sewer outlet recommended as efficient to remove solids, sediment, and flocculent matter is among the objects figured. Manholes should be made easy of access from the surface to admit of inspection. The most approved form for these, with ventilating chamber and charcoal basket, is also figured. Danger, in deep trenches, must be looked for from quicksands, loose earth, bog, or made ground; and guarded against by close timbering and packing up, and either by leaving the timbers in the trench, or removing them with the greatest care.

For water-pipes, Mr. Rawlinson recommends cast iron, or cast-iron gas boiler plate, or wrought-iron or copper pipes, and earthenware pipes, where not liable to pressure, are preferable to lead. The care required for forming conduits, tanks, and wells, is dilated upon minutely. An opinion respecting the value of sewage is thus positively given:—

"Sewage contains the elements of every field or garden crop, and, in fact, is a complete manure. There are advantages in using fluid sewage. The water of sewage in dry weather is alone of great value. 24 gallons (1 ton) of sewage, in summer, worth about trepence compared with Peruvian guano at 11s. per ton. Sewage may be applied to common grass, to Italian ryegrass, and also to root and vegetable crops. The earth possesses the power of attracting and absorbing from sewage all the manure it contains, if the drainage, in volume, be proportioned to the quantity broken up, and to the quality of the land. Sewage-gerbage increases the volume of milk cows will give, and improves the quality of the butter. Sewage may be applied to land throughout the year."

Lunatic asylums are just now in rather unfavourable repute, owing to several cases of broken ribs that have been produced in the carrying out of processes in vogue for quieting restless, paralytic, pauper patients. At a meeting

of the Pathological Society, Dr. Thompson Dickson recently presented some bones from a paralytic patient, of forty years of age, which were remarkably soft and fragile, to show how easily they could be broken. An impression of too much roughness, or too little regard for soft and fragile bones, however, still remains. Many will be, doubtless, surprised to find that the commissioners have considered so many points in the housing of unfortunate, whose bones meet with so little tenderness. A little more breaking up of the bones, and more provision for amusements, beyond that occasionally to be had by the transformation of the dining-room into a hall of entertainments, would place an asylum, constructed according to their suggestions and instructions, almost upon a level with any hygienic establishment. Where return to health, mental and physical, is the general aim, a detached hospital for any epidemic that may break out among the patients should, as well as these items, be stipulated for in more stringent terms in the next edition of the instructions, and then well-wishers of the afflicted would have but few more constructional improvements to urge.

NEW TRAVERSE STREET FROM THE STRAND AND HOLBORN TO THE NORTH-WESTERN RAILWAY.

FROM east to west, extending eight miles, our city is permeated by streets and roads, and its enormous population; Oxford-street and Holborn being the widest, the most central, and direct; Piccadilly and the Strand the more devious; both lines converging in a sweep round St. Paul's,—not because there is no open for their direct junction, but that a heavy iron railing meanders round the cathedral, and the Corporation, in the way. Oxford-street presents a direct line of suitable width, about three miles in extent, from Uxbridge-road to Farnham-street. Along this route the greatest improvement has been effected,—first, by pulling down the block of insulated houses called Holborn Bars, but most by bridging over the Fleet, and cutting a new road, the Corporation, an unequalled style of liberality. In strong contrast, however, with this, the Temple Bar is allowed to stand in ruin, and obstruct the still more important highway of commerce, the last of the corporate barriers of free intercourse; but so soon as the long-pending question of the Courts of Law is decided, that too must give way (like Cripple-gate) in the march of improvement.

What the public really wants is a line of intercommunication between the Strand and Holborn—one struck out so as to alignate with the best north-western route, through the W.C. district, and leading to a railway station, by a wide, long, and direct line of distance.

In the plans of the new Law Courts some allusion has been made to the necessity of enlarging Serle-street into Lincoln's-inn-fields, and thence perhaps to widen Great Turliff-street, so as to give a coe-sided approach. It is difficult, however to see how this line could be drawn, of sufficient latitude to the Strand, and without impinging on the site already secured, which is little enough for a building that ought to be national, and creditable to the skill and taste of the day.

On the other side of the plot selected a line of street might be drawn through the worst slums of our great city, that could be effected with little loss of ground, and would form a convenient causeway from north to south, whilst it would reclaim squalid shambles, and transform them into an ornament to the whole vicinage.

Lincoln's-inn-fields, with their fine array of vigorous plants and shrubs, will quadruple with the proposed north elevation of the Law Courts, at least a yard of demolition to permeate the way on the west side is but 110 yards distant from Holborn, through Little Turliff-street, one half of that passage being already of sufficient width. Then continue the street from the north-west angle of the fields in a straight line southward to the Strand, just opposite Norfolk-street—the distance is but 170 yards, and there will be only a few yards of demolition to permeate the New Inn, part of Newcastle-street, Houghton-street, and Holles-street, Clare-market, Giltspur-street, and Portmouth-street, the vilest of coater-mongers' quarters. Upon such grounds, the works of reconstruction and the formation of a new street would be comparatively inexpensive, and at the same time, give health to a region which has hitherto been the dark retro of law-

this sewage washed immediately into the sea, the river is least capable of doing it; the silt accumulates, channels become shallow, currents sluggish, and thus one evil produces another.

In speaking to different farmers upon the matter, I have not unfrequently been told that the springs in certain fields have failed in an extraordinary manner, and that the cause was as to drainage, and pointing out the impotency of springs supplying water if their supply is cut off by drainage, they have told me that they were thinking of taking up the drainage pipes that had been laid down. This, in some instances, must be done, unless each farm is furnished with water. Drainage in some of the counties has proved but poor economy. We have turned our bogs into gardens, and our gardens into deserts. We have been scientific in the matter. Had we, before draining to the extent we have, calculated the rainfall to each acre, found what each acre required, the necessities of the population, the flow of the rivers, the strength of the current required to retain the silt in the channel, and the collateral questions involved, we should have provided artificial springs before destroying the natural. We should then have heard less frequently of floods, of falling bridges, of floating haystacks and cradles with sails and canvas, of stagnant pools instead of silvery rivers, of fish poisoning, of dying cattle, of bankrupt farmers, of fever and death.

M. U.

PARLIAMENTARY.

Unemployed Labour.—On going into Committee of Supply, Mr. McCulloch drew attention to the continued want of employment in many of the great towns, with the view of inducing the Government to do something for the promotion of emigration to the colonies, and for the cultivation of waste lands at home. He would have, for example, as he said, third-class ships, like third class steamers, for emigration; and to every workman paying down 3s., he would give a passage by these ships to Canada. Other members took part in the debate, and Mr. Goschen, in a very able speech, showed, from a host of documents, that trade and employment are reviving at almost all the centres of industry, and that the unemployed are being rapidly absorbed. The revenue returns, he said, show that the working classes are consuming more sugar, more tea, more beer, more spirits, and more tobacco than ever. Those classes are depositing more in the savings-banks and contributing more to the Imperial Exchequer; and there is scarcely an indication on which we can rely that does not point to increasing prosperity throughout the length and breadth of the land. "All the facts," he added, "to which I have referred, leave not a doubt of this—that the distress is not greater than it was a year ago, that it is not greater than it was two years ago, and that it is decreasing in the most important and great misery in parts of the metropolis, and local misery elsewhere. The question, then, is—are we to legislate on this subject; are we to go back from the great principle we have always acted upon of leaving the labour market free, of letting labour take care of itself? I intended that we ought not to do so unless a very strong case is made out." He did not think that there still remained enough distress and want of employment to deserve the attention of the Government; but he asserted that the remedy was to be found, not in reversing all our past legislation, or resorting to extravagant schemes of education, but in removing the obstacles in their competition with foreigners, and encouraging the self-reliance and self-dependence for which they were distinguished. Members afterwards spoke both against and in favour of Mr. Goschen's statistics and conclusions, and the debate was adjourned.

Cavalry Barracks.—In reply to Sir C. Dilke, Mr. Cardwell said that no proposal had been made to the Government with respect to the purchase of land in Chelsea for the purpose of cavalry barracks, and he had not thought it necessary to interfere in the matter. This scarcely agrees with what has been stated elsewhere.

The New Law Courts.—Mr. Ayrton informed Lord E. Cecil that questions had arisen of a very complicated character, which would take some time to solve, in relation to the new courts of law, which it was desirable to solve before the plans could be agreed on and proceeded.

Accommodation for Reporters in the House.—

Mr. Ayrton informed Mr. Taylor and the House that his attention had been directed to the character of the accommodation provided in the House for reporters, and he was about to submit the results to her Majesty's Government; and if the plan which he had prepared should be approved, it would be submitted to the House in the special service estimates.

The Kensington Improvement Bill.—The First Commissioner of Works has informed the House that he shall postpone this Bill till next session. The matter has not been very well managed, and opposition to a desirable improvement was unnecessarily raised.

The Embassy House at Constantinople.—In reply to Mr. Rylands, the Secretary to the Admiralty, Mr. Stansfeld said that on the event of resolving to rebuild, no contract would be entered into before it had been laid on the table. Should the estimate be laid before the House this session, it would necessarily be a rough one; but in that case he should do his best to make it as accurate as possible.

OPENING OF ARDINGLY SCHOOLS.

THE opening of Ardingly Lower Middle-Class School, of which we gave a view and plan in our volume for 1867, pp. 536, 537, has just taken place.

This educational establishment, which bears the name of St. Saviour's College, is situated on the slope of a hill overlooking the valley of the Ouse, and is visible from the great viaduct on the Brighton Railway, between Hayward's Heath and Balcombe stations. The college is designed to accommodate 140 boys, and is divided into small tradesman classes; and, for the small sum of 14s. per annum, each boy is boarded and thoroughly educated, the education being based on Church teaching. The institution will be self-supporting. The first stone of the building was laid by Earl Granville, on the 12th of July, 1867, and since that time the works have been pushed steadily forward, and are now far advanced. The plan consists of two long quadrangles, the lower one being open on the southern side. The two wings of the lower quadrangle have accommodation for 400 boys in eight dormitories for 50 boys each, the ground floors being occupied by class-rooms, with masters' rooms at the ends. The head-master's house adjoins on to the south end of the east wing. The cross-buildings between the two quadrangles comprise the upper and under dining-halls, and the two great school-rooms, which occupy the whole space under the chapel. A tower stands between the hall and the chapel, which is resolved by a staircase to communicate with the ante-chapel. The upper quadrangle has on the three sides double dormitories for 500 boys, with class-rooms and masters' rooms, and separate school-rooms for the very young boys. The kitchens and offices stand westward of the dining-hall, and form a distinct quadrangle. The ground falls rapidly towards the south-east; a terrace wall, therefore, is carried along the southern front, and the quadrangles kept on one level; below the terrace is a steep slope with a lake at the bottom. The River Ouse forms the south-east boundary of the estate. The style adopted is simple Early Pointed, with alternate two, three, and four light cusped windows in the wings, and three-light tracued windows in the upper dining-hall. The materials are red brick for the walls, and for the windows, arches, dormers, bands, and other architectural features, the local sandstone, which is of a light brown colour. The roofs are covered with brown tiles from St. John's Common. The windows are of a very simple decoration; the sashes of glass are of iron. The sum of £5,588, has been paid for the site, and the estimated cost of the buildings is about 35,000. The architects are Messrs. Slater & Carpenter, of London. The clerk of the works is Mr. Knight, of Shoreham, builder to St. Nicholas College.

The buildings at present erected comprise the two wings of the lower quadrangle, including a portion of the head-master's house, half the cross building, the kitchen, and the offices. These will give accommodation for the head-master and his family, fourteen other masters, a staff of servants, and 450 boys—in all, about 500 persons. The portion of the cross buildings erected consists of the upper and lower dining-halls, but till the chapel is built the lower hall has been fitted up for divine service. This building is 120 ft. long and 62 ft. high. The upper hall has an open roof of Memel timber, stained and var-

nished. The two wings of the quadrangle completed are each 162 ft. long, 47 ft. high, and 37 ft. in width. The space across the quadrangle, which is covered with turf, is 182 ft. The buildings will occupy about three acres.

The school, which already numbers 250 boys, has hitherto been carried on at Shoreham, houses being hired for the purpose, but the boys will now very shortly take up their residence at Ardingly.

ON THE UTILISATION OF THE HEAT THAT USUALLY PASSES AWAY IN CHIMNEYS.

SIR,—Economy in fuel has been justly for some time a matter of scientific investigation.

It has been well known that heat is given off from the outer surface of pipes, shafts, and chimneys while transmitting heat, and that heat has been produced in stoves or furnaces, but the quantity of heat in such cases is too inconsiderable to answer the end of warming any apartment through which they may pass. The power of arresting the heat usually lost by passing into the open air, may be greatly augmented (as will be clear to any reader on reflection) by causing the air of an apartment to be constantly transpiring such flues or pipes, but in no way communicating with the interior.

For some years past I have thrown my thoughts into this subject, and have conducted experiments, the results of which have shown me that a vast economy of fuel, with other advantages, may be derived through the use of the carrying out of the principle above stated.

I am not aware of the exact proportion of heat that is afforded by fires in ordinary stoves, grates, &c., to the apartment in which they are placed, but I have understood and believe that the proportion is small compared with that which passes away into the open air. It has been stated to be as three to seven. To utilize that heat which would usually pass away is the great desideratum, and I am convinced that this is within our reach to a great extent.

The following are the plans I would recommend, and the objects to be obtained:—

First, to have there on a narrow chimney or shaft passing through an apartment connected with a fire in the same room, or in a lower room, warmth may be communicated by transpiring such chimney with tubes obliquely, so that the air of the apartment passing through from their lower to their upper extremities shall be heated, and passing into the room will of necessity warm the whole air.

On taking possession of a cottage which I had purchased, I found just such a narrow chimney in one of the bedrooms, and for two years by such means this room has been kept warm whenever a fire has been lighted in the room below. This is, however, an imperfect instance of the advantage to be derived from the plan. It will be found that the surplus heat produced by a fire, and which would ordinarily pass away by the chimney, may with great facility, in many cases, be given to adjoining rooms on the same or upper floors, and this may be accomplished—

Secondly, as follows:—Where a chimney runs upwards, through a wall which divides the room in which the fire-place is placed (connected with such chimney) from another, the superabundant heat may easily be conveyed, instead of going off by the chimney, to the apartment behind the wall. An opening for this purpose may be made at the back of the stove above the fire, and through this hole, or an earthen pipe, may be introduced, of sufficient length to allow an elbow of a metallic pipe to be fixed, in which a valve or damper should be inserted. From this elbow a flue may be carried upwards, or in any other direction, through which have been inserted small tubes, from 2 in. to 3 in. in diameter, in oblique direction. This pipe may be carried through the floor to the apartment above and beyond, according to the quantity of heat that may be usually transmitted from the fire beneath.

The size of the pipe may be varied; but that which I have employed is about 7½ in. in diameter. This plan I have put into operation in two instances, and have kept warmed six rooms, during the last two winters, by two fires. The temperature varying, of course, according to the size of the fire, and the external temperature of the air, it may be said that proper pro-

* I have tried a variety of metals, and at present give preference to tinued iron.

ration must be made for the safe transmission through the flooring, although the heat never rises to a dangerous degree; and also the pipe at its further extremity must bend by a slanting elbow into a chimney (in my case it is the same chimney). It must be further observed, that these stoves above alluded to are Komford, or "register," stoves, and that the heat requires to be shut out from the chimney by the register-flap, or by a damper above the fireplace, so as to send it back into the pipes.

Thirdly. The same effect may be produced by building a narrow shaft of brickwork at the back of an interior wall, having a fireplace on the opposite side, through which shaft small metallic tubes, the same as those above mentioned, varying from 2 in. to 3 in. in diameter, are introduced obliquely, the shaft itself communicating with the fireplace as before described, and furnished with a damper. This plan I have carried out by building a brick shaft behind my kitchen fire, which for two years has communicated sufficient warmth to a room behind and to a bedroom above it, the shaft terminating in the upper part of the kitchen chimney.

Fourthly. The object aimed at may be obtained by substituting for the pipe a box of the necessary size transfixed by small tubes either obliquely or perpendicularly, according to convenience, the box having two openings, one for the admission, and the other for the exit of the products of the fire.

A small church, with a high-pitched roof, 65 ft. in length, by 24 ft. in breadth, has been conveniently warmed by this contrivance for the last three years. The stove, which is 15 in. by 17 in. in dimensions, stands out of sight in a small shallow well at the end of the building, surrounded with brickwork; the box through which the products of the fire pass is in length 48 in. by 10 in. in breadth, and 36 in. in depth, and is transfixed by 16 tubes, some nearly horizontal, and some perpendicular. The draught from the stove is made to pass from one corner at the bottom of the box across to an opening at the opposite corner at the top, where it passes into the chimney.

On experimenting with this limited apparatus, I found that the box and tubing did not sufficiently economise the heat produced by the stove, and I thereupon attached a second box, 26 in. by 10 in. by 36 in. in dimensions, and have thereby fairly accomplished the desired end. In the stove-colet is a relatively burned, and each day costs only from 6d. to 8d.

The temperature of the church can be easily sufficiently raised in about four hours. The only observation that I would further add is that this principle, viz., of warming the air of apartments by the surplus heat, which ordinarily passes away by communicating it to the air, by its passing through small tubes, as above described, may be carried out in a variety of ways, as I have proved by making other experiments, and that with proper adjustment it may be made to conduce also to the ventilation of apartments by the external air so warmed in its passage.

As my object is simply to communicate a means of comfort and economy procured at small expense, from which I myself and some of my friends have derived benefit, allow me to make use of your widely-spread journal for this purpose.

JOHN WHITING, M.D.

(Member of the Royal College of Physicians, London.)

STEAM CULTURE.

At a meeting of the Wenlock Farmers' Club, reported in the *Shrewsbury Chronicle*, a paper was read by Mr. Stables "On the Advantages of Steam Culture," &c., from which the following is condensed.

What is the relative cost of steam and horse labour? . . . As a principle, applying a 12-horse-power set to cost £800, including all accessories that amount involves a sum, for interest, of 30l. per annum; that is, for the power of 18 horses, with the implements of culture. Suppose that 18 horses of ordinary stamp, should be bought for 30l. each, and the implements required in

using their powers on the land cost 10l. more, we have the amount of 510l. for horses, and 110l. for implements, making a total of 650l., which commands interest to the amount of 32l. 10s. Were the extent of land sufficient, and the circumstances of the farm or farms conducive, so that this 18-horse-power could displace the same number of horses, then it follows that no more capital is required to farm with steam than with horses. . . . The fact must be palpable to the most unaided eye that steam tackle should, with proper care, and if adapted to the work to which it is applied, be worked at a much less rate of deterioration than horses. The steam-horse is headless of those atmospheric influences which prove so deleterious to the varied members of the animal world. Alike a stranger to attacks of colic and inflammation, and ignorant of all vicissitudes of weather, it uses its wondrous power at the bidding of intelligence, knowing no other will but that of its attendant; and in the development of its strength, it is alike a stranger to galled shoulders and wearied limbs.

The introduction of steam-cultivating tackle into any neighbourhood is a matter of importance not only to the occupier, but to the proprietor. The land is permanently improved by steam cultivation. How is this? Depth of culture tends to increase the depth of the soil. Depth of culture in facilitating the action of the drains; and, making the land more constantly and permanently dry, tends to improve the quality of the soil. While these facts point to increased annual value, the possession of tackle enables a tenant, by increase of crops and by saving of expenditure, to combat with seasons, drought, and disease, and to tender to exact rent punctually and fully paid. There are many enterprising, industrious, persevering tenants who would be glad of steam power, and whose farms are well adapted, and with such power would make a good profit, but now can but manage to live and pay their way. Maybe their landlord is looking out for money investment, and is glad to get 3 per cent. for his surplus income. Why not invest in the steam-cultivating tackle for the benefit of his tenants? Why not lend them part of the purchase-money of the tackle on the security of the tackle itself? True, there are some co-schemers who have little mechanical genius, and who would make little profitable use of a set of tackle. But this is not the case with all, and the principle is the same.

CATHEDRAL RESTORATIONS.

Rocheater.—The appointment of the Rev. Dr. Scott to the deanery of Rochester will, it is believed, lead to the restoration and renovation of this cathedral at no distant date. For many years past the funds from the suppressed monasteries of the cathedral have been accumulated in the hands of the Commissioners, and these now amount to between 30,000l. and 40,000l. A strong hope is now expressed that the accumulated funds will be expended in improving the cathedral, both internally and externally. The removal of the old block of houses on the south side of High-street has opened up a fine new view of the north-eastern portion of the cathedral. A further improvement might be carried out by still further throwing open this partially inclosed space, and making a road to the eastern end of the cathedral from High-street.

Ely.—Between two and three years ago, Mrs. John Thomas Waddington, of Troyford Lodge, near Winchester, undertook the restoration of the great western portal of this cathedral, renewing the richly foliated tracery of the colonnade, and replacing the entire series of marble pillars. This work was executed by the firm of Messrs. Rattee & Kett, of Cambridge, under the direction of Mr. G. G. Scott. Mrs. Waddington was anxious, at the time, to present a pair of new oak doors to be ornamented with richly-wrought metal work. An objection was, however, raised to the displacement of the old doors, and the experiment was made by Bishop Eustace, in the thirteenth century, and an attempt was therefore made to repair them by cutting away all the decayed portions, and inserting new wood. The result, however, was very unsatisfactory and patchy. Experiments were tried of staining the doors, but no uniform colouring could be obtained, whilst the effect of the ironwork on the darkly stained doors was altogether lost. Other experiments were made of painting and gilding the ironwork, which were equally unsatisfactory. The door has been ceased with new oak, and the ironwork replaced.

Lincoln.—An interesting experiment has recently been made, with a view of ascertaining whether it is not possible to add to the beauty of the interior of this edifice without the enormous expenditures of restoring certain portions of the fabric, which have suffered from the ravages of time. The pillars which support the arches of the triforium, or angels' choir, have been at some period covered with whitewash, in order to conceal the decay of the stonework. In one portion, above the presbytery, the whitewash has been removed, and the surface of the columns, first smoothed and then rubbed with oil, and varnished. The effect of this, it is said, closely resembles that of polished Purbeck marble, and serves to throw into relief the foliage and tracery with which the arches are so elaborately decorated.

THE GRANITE CHURCH IN ABERDEEN

The Roman Catholic church of St. Mary of the Assumption, Aberdeen, was opened on December 20th, 1860, is the largest in the city of Aberdeen, the dimensions being,—nave, internal length, 150 ft.; breadth, 30 ft. 6 in.; breadth of aisles, each 16 ft. 9 in.; total width internally, 69 ft. The aisle walls are 20 ft. high, the walls of the nave 43 ft., and the height from the floor of the nave to the apex of the roof is 70 ft. The nave is divided each side into seven bays by piers and arches of polished granite freestone, and the church is lighted from the clerestory only by triple lancets above each of the nave arches. Two traceried lancet windows on each side give light to the sanctuary, and there is a large traceried window in the west end of the nave, 15 ft. wide and 30 ft. high, divided into six lights, and having three large circles in the arch. Externally the church is built of the light white granite, from the Kemnay Quarries, Aberdeenshire. The entrance to the church is by a monoid doorway, with polished shafts of grey and red granite.

The tower is at present carried up to the bottom of the belfry-stage, and stands 80 ft. It is now proposed to complete the spire, the height of which, from the ground to the top of the cross, will be 200 ft.; and as the whole structure is to be of granite, to correspond with the present work of the church, it will be peculiar, if not unique. In the lower part of the tower, and opening into the north aisle, there is a small chapel. There are besides three altars at the east end of the church, and one in the west end of the south aisle; large vestries on each side of the sanctuary; and the windows of the sanctuary are filled with stained glass, by Mr. Lyon, of London. There is a large presbytery on the north-east of the church for the resident clergymen; and more recently there has been added a conventual establishment, of very plain description. The church is seated for 1,400 persons. In the nave between the arches, and supported on large moulded corbels above the piers, are figures of the twelve apostles, colossal size, the work of the late Mr. Alexander Brodie, of Aberdeen. The architect of the church was Mr. Alexander Ellis.

NEW BANKING HOUSE, NEWCASTLE-UPON-TYNE.

OWING to the great want of accommodation in the premises occupied by the National and Provincial Bank, in Newcastle, it was a short time ago decided to erect a new building, with architectural pretensions. An expensive site was procured at the corner of Dean-street and Mosley-street, and the preliminary work having already been accomplished, the foundation-stone has been laid in the presence of a numerous body of gentlemen connected with the company. The new building, which is expected to cost from 14,000l. to 15,000l., will be erected from designs prepared by Mr. John Gibson, of Westminster, and will have a curved front of 85 ft. in Dean-street, and 59 ft. in Dean-street, the entire premises extending to St. Nicholas-churchyard in the rear. Both the fronts are to be constructed of Kenton stone. The building will rise to three stories above the ground-level, the lower story being rusticated. The windows will be semicircular headed, and the doorway will be ornamented with polished red shafts, the arms of the columns surmounting the entrance. The windows of the first story will have Ionic columns and enriched pediments; while the two upper stories will be enclosed by pilasters and cornice, the frieze inscribed with the title of the company, date of its establishment, and date of

* The register flap or damper in the chimney may be arranged so as to regulate the quantity of heat communicated to the pipes.

* The damper should be kept open above the fire when there is a fire, and that within the pipe should be closed. I find it best in all cases to employ coils, as it communicates no foulness to the pipes. Heat from gas-burners may in the same manner be utilised as well as purified by an appropriate apparatus.

its erection, with blocking, which completes the building. The entrance to the bank will be in the centre of the Molesey-street front. The internal arrangements comprise a banking room of over 70 ft. long, 30 ft. wide, and 22 ft. in height, being spacious enough for thirty-five clerks. The ceiling of this apartment will be flat in the centre, divided into lozenge-shaped panels, with a groined cover all round. The treasury will be constructed of brickwork, with hardened iron bars, and contrivances for insuring perfect security, the iron safe being of Messrs. Chubb's manufacture.

The contractor for the edifice is Mr. Joseph Elliott, of North Shields; and the work will be carried on under the supervision of Mr. W. Glover, the clerk of the works.

LIFE BY THE LIFEFY.

AN important case, in a sanitary point of view, has just been decided in the Dublin Law-courts, in which a woman claimed and got damages from the corporation for the loss she sustained by the death of her husband, who was employed by the corporation, and who met his death by the foul gases in the Dublin sewers. The culpability of the corporation was fully proved, and the sheer neglect they had from time to time exhibited in not remedying that hideous scandal and disgrace of Dublin, the Lifey and its feculent tributaries.

The case of *Anno Loughman v. The Corporation of Dublin* is really a most important one, and we hope the verdict obtained against the municipal authorities of Dublin will shame them into action in abolishing at once an acknowledged nuisance, by the adoption of one of the methods so often pointed out by us for the purification of the river Lifey.

The Dublin press, some of whose proprietors are aldermen and town councillors, have acted with a suspicious silence in not noticing this law case, because of the example it makes. But enough for the day, as we shall probably next week afford our readers some additional evidence of the sanitary condition of Dublin, and life by the Lifey.

EASTBOURNE PIER.

THIS favourite and prosperous watering-place was on Monday, 13th, the scene of gay festivities in connection with the opening of the new pier by Lord Edward Cavendish, one of the county members, and son of the Duke of Devonshire. This pier, the opening of which we mentioned last week, was designed by Mr. E. Birch, by whom the first pier of the kind was erected at Margate about sixteen years ago, and who has been the designer and contractor of those at Brighton, Scarborough, Blackpool, and other watering-places.

The new pier when completed will be about 1,000 ft. in length, with a minimum width of 132 ft., increasing to a width of 135 ft. at the head, which is of a triangular form, and provided with all necessary facilities for landing and embarking passengers from steam-vessels and pleasure-boats. The arrangement of weather screens made of glass, as on the Brighton Pier, has been adopted here.

The entire superstructure rests on iron columns fixed into the ground by means of screw piles; and has been executed by Messrs. Head, Wrightsons, & Co., of the Teesdale Ironworks.

HULL WORKING MEN'S ART AND INDUSTRIAL EXHIBITION.

THE building, situate in the Corporation Field, is a wooden erection, designed by Mr. R. G. Smith, architect. It has been constructed by Messrs. W. & J. Hall, contractors, of this town. The building, with its enclosures, stretches across the north end of the Corporation field—a distance of more than 300 ft., and it has a frontage to Park-street. Between the building and the street the ground is laid out attractively. In the centre of the ground, opposite the porch, is a large artistic fountain. On each side of the path is an enclosure, with a flower-bed in the centre, and two large stone eagles are also placed in front of the building. The front is stained, and the other portions of the exterior have been painted a stone colour. The central and main portion of the building is 150 ft. long by 50 ft. wide, and 45 ft. high to the apex of the roof. The annexes on each side are 158 ft. long by 80 ft. wide, and 24 ft. high. In the centre of

the hall there has been constructed a fountain, and around it have been placed seats for the accommodation of visitors. The fine-art department is at the west end of the north aisle, and is 90 ft. long by 30 ft. wide, and lighted in the daytime, the same as the other portions of the exhibition, from the roof.

THE SMALL BEGINNINGS OF GREAT ENDINGS.

A poor woman in Constantinople, the other day, was about to go to the upper floor of her living-place to bring down the mangel, or pan of lighted charcoal, for cooking; but, feeling lazy—the day was warm—sent her child for it. The child let the pan fall on the stairs, near a window-curtain; and the result of the woman's case of mind was that terrible fire we have all heard of, which has reduced 30,000 persons to destitution, utterly destroying many hundreds of them, and some thousands of houses. If a neighbour had given the poor woman 10,000L. not to send the child, it would have been a good bargain.

LAYING THE FOUNDATION-STONE OF THE STANLEY HOSPITAL, LIVERPOOL.

THE Earl of Derby, in company with about 200 gentlemen, has laid the foundation-stone of the Stanley Hospital.

The ground for the hospital has been given by the Earl, and the cost of the entire scheme, which includes a trial of the cottage plan of hospitals, will be not less than 15,000L.

In aid of the hospital funds there has been a fete of four days at Stanley Park, and the extraordinary sum of 10,000L, free of cost, has been thus realised.

The principal building is to have a frontage of 300 ft. to the Stanley-road, and will consist of a central building of 50 ft., and two wings of 60 ft. The northern wing will contain a small chapel for the use of the patients, and the southern the waiting-room and dispensaries for out-door patients. The buildings allotted to the in-patients are to be placed at the rear of the main building, and will be erected on what has been referred to as the cottage plan. They are to comprise four wings, each wing consisting of four wards, and each ward will contain five beds, giving to each patient 1,100 or 1,200 cubic feet of air. All surgical cases will be treated on the ground floor, the medical cases being dealt with on the second story. Every accommodation in the shape of bath-rooms and ventilating apparatus has been provided for; and when the plan is complete, it is calculated that there will be space for 176 beds, although at the commencement it is expected only to provide for a portion of these at an expense of 8,000L to 10,000L, and to finish the design as funds may accrue. The part to be first proceeded with will be the main building fronting Stanley-road, which will give accommodation to about fifty in-patients, in addition to the dispensaries for out-door patients. The plans are by Messrs. Wainwright & Son, of Liverpool.

JOHN OF LEYDEN'S CARD-TABLE, MUNSTER.

THIS interesting relic of antiquity, of which we give an illustration, now serves a purpose much at variance with the object for which it is said to have been made. It is now the "Credence-table," for the high altar of the cathedral at Munster. It seems to be of rather an earlier style than that in vogue at the time of the notorious fanatic, who styled himself "King of Munster and Jerusalem," and who took possession of the town of Munster in the year 1584. However, it must be remembered that Gothic architecture continued to be used in this part of Germany, and remained very pure and free from classicism, down to a very late date. This table is made of pine wood, and is in an excellent state of preservation.

ST. JOHN'S CHURCH, SCHWÄBISCH-GMÜND, GERMANY.

RECENTLY we gave some particulars of the interesting town Schwäbisch-Gmünd, near Stuttgart, with a view of the doorway of Holy Cross Church there.* Although the town contains

now only about 5,000 inhabitants it has as many as twelve churches, ten of which are still used for religious purposes. There are also remains of two others, so that before the period of the French Revolution, when all the religious orders were suppressed here, there must have been at least fourteen churches. Six of these are outside the walls, which would lead one to suppose that originally the town had very extensive suburbs, that have ceased to exist.

We will begin our renewed description of the churches with those that are extra-mural, and the first which will occupy our attention is St. Saviour's. This building is one of the most singular in Europe: it is a small church of two stories, both of which are cut out of the rock; at the south-west angle is a lofty octagonal tower, now covered by a dome; and at the east end is a kind of open altar. These are the only portions of this singular building (if it can be called a building) which are not cut out of the solid rock. The lower church is evidently of a much earlier date than the upper one; it is a kind of crypt of very irregular plan. Near the east end is a large crucifix, with attendant figures, about life-size of the twelfth century workmen; this is probably as old as the tenth or eleventh century. The upper church is probably not earlier than the fifteenth century; it is a simple parallelogram about 50 ft. long by 20 ft., and, like the lower church, is entirely cut out of the rock: it is adorned with a great deal of rude, thirteenth-century sculpture, and a fine piscinae, the "Seven Dolours," very much in the style of A. Dürer; and some very bad modern glass. There is an external pulpit, and a series of "Calvary chapels" are placed at intervals along the flights of steps leading to this church.

Two of the other churches outside the walls are quite similar in plan to the upper church, a lofty octagonal chancel, and a very vaulted nave of three bays; the chancel arch is in both cases filled with a metal grid, which in one case is ancient.

Of the churches within the walls three are worthy of notice, St. John's, the Franciscan Church, and the superb Church of the Holy Cross, where we will now describe the last.

The Church of St. John is the most ancient ecclesiastical edifice in Gmünd (with the exception of the lower Church of St. Saviour). It consists of a nave and aisles of moderate dimensions, a tower at the east end of the north aisle, and an apsidal chancel. The nave, aisles, and tower, which we will now describe, are of the thirteenth century, and of a singular character; the chancel is Thirteenth Pointed. This church is said to have been in existence in the year 1102, but very little of the present building can date from that period. The remarkable Pseudo-Classical detail of the tower and portions of the nave, the use of the pointed arch, and the great richness of the ornamentation, lead us to believe that the greater portion of the building does not date from an earlier period than the last quarter of the twelfth century or the commencement of the thirteenth.

The tower (of which we now give a view) is a beautiful specimen of the latest Romanesque style. The spire with which it is crowned is covered with green and yellow glazed tiles, which are not older than the fifteenth century. It is probable, however, that the form of the spire is original.

This church is being thoroughly well restored, and all the plaster abominations and tawdry altars and ornaments with which it was disfigured during the sixteenth century are being removed, and will be replaced by others more in harmony with the style of the church. The plaster vaulting of the nave is also being removed, and will be replaced by a flat boarded ceiling, restored from portions of the ancient one which have been brought to light. Very interesting remains of ancient decorative painting have also been found under the thick coating of stucco which disfigured the walls of the nave. When the restoration is completed this church will be a gem of late Romanesque architecture. We should not omit to mention the doorways of this church, which are very rich and beautiful. They are adorned with carved shafts resting upon the backs of lions, and all the tympana are filled with sculpture.

REFERENCES.

- A. Cornice under spire.
- B. Cornice above broach.
- C. Cornice under broach.
- D. Base table.
- E. Arch-mould of windows of lower story.

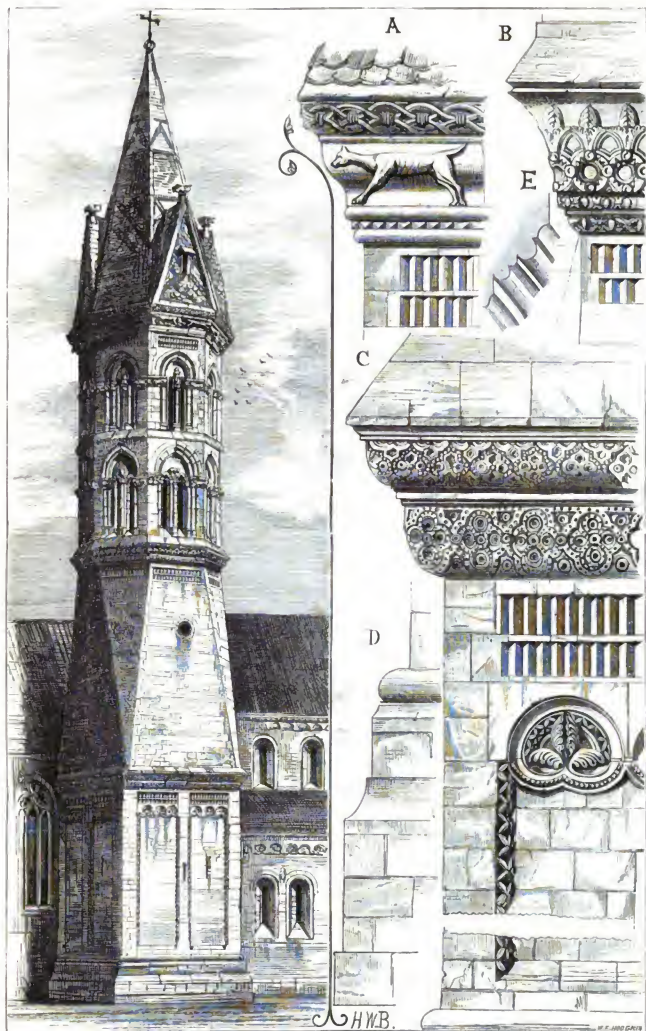
* See pp. 365-367, ante.



MR. HENRY CURREY, *Architect of St. Thomas's Hospital.*



MEDIAEVAL FURNITURE: JOHN OF LEYDEN'S CARD-TABLE.



ROMANESQUE TOWER OF ST. JOHN'S CHURCH, SCHWÄBISCH-GMÜND, GERMANY.

THE NORTHERN ARCHITECTURAL STUDENTS' SOCIETY.

THE first annual report of this little body (the members at present only number fourteen), reviewing progress, says,—

"On the 14th of December the inaugural address was delivered by the president (W. L. Newcombe), and since then seven papers have been read and discussed, namely: "The Studies of a Young Architect," by W. S. Hicks; "Landscape Gardening," by W. Bedington; "Decoration," by C. Hall; "Villa Architecture," by J. H. Morris; "Architectural Art," by J. Oswald; "Foundations," by G. D. Oliver; and "Timber used for Building Purposes," by E. Thornhill. Besides the in-door meetings of the society, which these papers have been the principal business, two out-door meetings have been held,—the first at St. Dunstons Delaval Hall, and the second at St. Nicholas's steps, and the Mining Institute, Newcastle.

The committee remind the members that one of the principal objects of this society is the encouragement of the study of ancient architecture, from the buildings that remain around them; and that the rules require the members to contribute original drawings of such examples.

A WORKMAN ON THE FREE LIBRARIES QUESTION.

SIR,—The recent paper in the *Builder* on the subject of Public Libraries will, I hope, be the means of calling the attention of your readers to the present position of that important and national question. The reflection on its personal must have a depressing effect on those who are anxious for the progress and well-being of the working classes; and it shows that, in relation to the library question, and the intelligence of the workmen, and the masses, in spite of all the boasts of England's greatness, she must, when compared on this question with the smallest Continental state, be called Little Britain. It is to be hoped that no intelligent foreigner reads the reports announcing the failures in different parts of the country to put the Act in operation, or the arguments used against the Act by her free and enlightened citizens, or the will, no doubt, that this England is fast drifting into the political state, and that in the transition period public spirit is dead, and the people have lost all interest in mundane concerns. The report of Mr. Ewart's committee showed how deficient this country was in free libraries, and how far behind we were twenty years ago in comparison with other countries. At that period every great Continental town had collections of books accessible to all classes. In France there were 107 free libraries; in Tuscany, nine; in Great Britain and Ireland, one. Thus, in the matter of promoting the intellectual condition of the people by reading, England was then eight times behind what was at that time considered despotism and beaught Tuscany. Turning from countries to capitals, the results are the same. At that time Paris had seven free public libraries; Copenhagen, three. The whole population of Denmark is not much beyond half the inhabitants of London; and yet the chief city,—not larger than a middle-sized English town,—had three public libraries; while London the Great, the mart of the world, with a population more in number than eight capital cities which at that time had twenty-four free libraries, had none; and to-day, there is but one, and that of so little importance as not to be mentioned in the late return. I believe the little institution in Smith-street, Westminster, is not known to one in fifty of the working men in London. Such a condition of things is, among all the disgraces of England, the greatest; and, for her honour, it is ardently desired by a few that it will not remain any longer.

During the last month I read most of the reports of what are called the May Meetings, and, wonderful to relate, this London, which is so far behind in providing intellectual food for the people, but which has more drunkards and more drunkards than the capitals of all nations, is looked upon as the civiliser of the world. The failure of one mission or the success of another was reckoned by a variety of speakers, and yet there were some important social and moral failures within a short distance of Exeter Hall which were not enumerated; and perhaps if the same sort of thing had happened in China or Madagascar, it would have found a place in some mission report, to show the dark condition of the inhabitants. Some time back, a few working men in Islington thought it would be a great advantage to the parishioners if the

Free Libraries Act were in force in the parish; and a regulation was presented to the vestry, for that body to convene a meeting of the ratepayers on the 5th of last January. The meeting was held at the parochial school-rooms, Liverpool-road, Islington, and the next morning's papers stated the resolution, "That the Public Libraries Act be adopted," was carried, the working men voting for the Act, the vestrymen and shopkeepers against. So far the ignorance of the workmen had gained a victory over the refined culture of the shopkeepers and vestrymen.

The 22nd of January, the second part of the business relating to the Act commenced in the vestry, by one of its members moving that the vestry appoint commissioners to carry out the Act of Parliament. The result of the motion created a commotion among the opposers; and, if the account of the meeting in the local press is to be credited, it created a screaming farce, which had not its equal in the days of reformed Bunzlows. After the farce had been played out, the last part finished with the motion being rejected by 52 to 4; and so up to the present stands the question, in the great and very highly-civilised parish of Islington. Another failure was in Shoreditch. It has often been lamented that the workmen in England are behind the workmen in other countries, in so far as education is concerned. It is said,—and the "Reports from her Majesty's representatives respecting the condition of the labouring classes abroad," confirm it,—that our tastes are low, our pleasures degrading, and that our earnings are largely wasted in debasing gratification; and when it is considered how much is provided to debase, and how little to raise, the intellectual condition of the people, there is nothing to surprise any but those who are strangers to the condition. Among the many evils caused by the want of free libraries, there is none perhaps greater than the narrow views partial reading fosters. Most of the small tradesmen have their daily pennyworth of paper. It may be Liberal or Conservative. The penny daily paper is too often the whole extent of their reading. Its opinions they take for their guide in public affairs; and there is no such party-rancour and no so little independent thought among the shop-keeping class. My employment takes me a great deal among that class, and I find they are not book-readers. Being somewhat fond of books myself, on going to a house I in general take a passing glance to see if the bookcase is well stocked, and I find that it is but rarely the case; and there are some curious wonders in the opposition which exists to the establishment of free libraries; for of all distorted visions perhaps mental blindness is the worst and most harmful to the community. Were a free library established in every parish, that class would be largely benefited, as there are times in the day when they are almost disengaged, and then they could visit the library and reading-rooms, and study the various questions of politics and trade from different points of view, and thus form their ideas on a broad basis, to the benefit of themselves and society. There is another class which might be benefited, for it is to be remembered that the institution would be open to all, and that is, those who are in the habit of borrowing the *Times* at a penny for an hour. Looking at it only from a pecuniary point of view they would receive a great advantage, as there are 313 working days in the year, and that alone would be 26s., and as the rate is limited to a penny in the pound, it would in most cases be but from 2s. to 8s. They would save in papers alone a good sum, and have the advantage of a free library into the bargain. If one-sided reading is an evil in the class which is a step or two removed from the working classes, it is a still greater injury to the workmen, as the leading articles of most of the cheap weeklies give distorted ideas of the habits of the upper classes. The writers in most cases are levellers, who would nobility and raze the foundations of society, and although they are great at pulling down, it is evident their wisdom would not build up again the strange the day who believe it is all gospel their preaching do not make a few inquiries to see if their idols are of common clay. If they did it would be found that the proprietors of their favourite papers are, as far as possible, the manners of those they are always writing down. The want of books and free libraries is felt among the class of workmen who are called intelligent. In high-class journals and reviews the great questions of the day are discussed in

all their bearings, and yet not one workman in a hundred reads them, or knows of their existence, although the articles are often on working men's questions, and are of greater importance to them than to any other class. In the last issue of the *Contemporary Review* a working man,—name, perhaps, might mean to the title,—contributed a paper "On Trade-Unions from the Workman's Point of View." There is no doubt many workmen would like to read it, but, unfortunately, the price of the *Review* is more than they can afford. It is not lent at the stationers' libraries; and I believe it is not to be found in a reading-room in London; so it is not the *Forthrightly*, the *Quarterly Edinburgh*, and *Westminster Review*. They are unknown to the earnest workmen, and it is a sad fact they are kept in the dark because their class are too ignorant to appreciate a high-class literature and the pleasure and advantages of knowledge. There are, it is true, some few bright spots in the intellectual desert of England. And I ask, why it is they are not in the metropolis, and all Liverpool and Manchester enjoy the feast. And it certainly behoves the people of this metropolis to labour earnestly until the great stigma is removed, and the people have within their reach the same opportunities for mental culture which the foreign workmen possess; and then some hopes may be entertained that the workmen will see the folly of wasting their substance in the gin-traps* of the metropolis, and that they will, when possessing the purest and least expensive of all gratifications, keep pace with the progress of workmen in foreign countries. There are so many points in the question; and as I have merely touched the outlines, I hope you will, sir, think the above worthy of insertion; so that other workmen may fill up the inner lines, and at last we shall be able, by a thorough organisation, to pay with interest those who have so long blocked the way in London.

JACK PLANK.

THE SEWAGE QUESTION.

THE Attorney-General has consented to lodge an information against the Corporation of Birmingham, on the motion of certain residents at Gravelly-hill, for depositing the sewage matter near the object, and thus causing a nuisance to the aggrieved persons.

Mr. Parnham, the engineer, has met the Sewage Committee of the Bromsgrove Local Board at the Town-hall, and, the details of the sewerage plan having been settled, instructions were given for the preparation of the working plans and specifications, upon the completion of which tenders for carrying out the work will be at once advertised for.

The select committee to whom the Thames Navigation Bill was referred have agreed to a special report, in which they say:—

"It appears, on the evidence of Sir John Thwaites and otherwise, that the Metropolitan Board have repeatedly had under consideration the best means of utilising the sewage of the metropolis, but that nothing effectual has yet been done, and the sewage will flow into the river Thames. Your committee recommend that immediate attention should be given to the subject, in order that the sewage of the metropolis should be utilised as far as practicable; and, in the mean time, until this can be accomplished, your committee have deemed it expedient to approve the bill which they have reported to the House for preventing any obstruction to the navigation of the river from the flow of sewage from the metropolitan outfalls."

THE DISTORTED STYLE.

SIR,—Some people see everything through a distorted medium. Your correspondents, "J. K.," refers to "the reproduction in costly stone of the toppling lath and plaster features of Old Edinburgh," now excluding dwellers there from plain substantial houses and modern residences. When I hear a man talk of a "plain substantial house," as his idea of a dwelling, I at once have a clue to the amount of art-culture he has enjoyed. According to him, nothing in stone is substantial unless devoid of ornament, and no house comfortable unless rectangular on plan.

* Mean,— "Gin" and "sawer," or "trap," are synonymous.—E.D.

To be perfect, the door must be in the centre, and flanked by an equal number of windows; if the whole are not required for use, then a blank one is requisite for symmetry. Of course, the chimneys must balance also, and all that is necessary to complete the effect aimed at is to get the smoke from them to fly off at opposite angles (where at school I used to manage this with slate and pencil). Enter this model dwelling, and you will be conscious that there is nothing restricting himself to what is plain and substantial in the internal decorations; he reserves what appears to him to be beautiful for his own enjoyment and that of his friends. Marble walls and ceilings; doors of oak, walnut, and maple (?); carpets with roses 2 ft. in diameter; levelly hearthings with peacocks depicted; and furniture—why describe it?—of the orthodox type. In fact, our model man prides himself upon being orthodox in everything: the beaten track is the right way; diverge from it and you are anathematised.

The new street referred to certainly do lack the spirit of the ancient ones, but there was the work of many minds. If various architects had been allowed to design the respective elevations for their clients, subject to the revision of the architects of the Trust, greater variety and more of the spirit of the old streets would most probably have resulted. Victoria-street is a noteworthy example of this, and, although modern, it is one of the most picturesque in the City.

DUN EXIN.

ACCIDENTS.

ON the Anlaby-road, Hull, a chapel, now approaching completion, for the use of the Primitive Methodist congregation, was miserably from a gale of some violence. The roof (to a great extent completed) gave way under the effect of the wind, and in one mass, the greater part falling into the interior of the building, breaking the gallery timbers and destroying nearly all the woodwork which had been fixed, and doing very serious damage. The chapel inside appears one mass of broken spars and timbers and iron. The accident, besides delaying the progress of the work, will be a serious loss to the contractor. While some men were repairing a wall at New Grange, Wapping, one of them descended, and while within a few feet of the bottom of the wall of the waiting of the well fell in upon him. Immediate efforts were made to extricate him, but without the slightest hope of getting him out alive, the well being 60 ft. deep. When the rubbish was removed to within about 40 ft. of the bottom, the sufferer was heard shouting to those above, and he redoubled their exertions to save him, and at half-past six the body was at length raised without a bone broken, but, as may be supposed, very much bruised. There is no doubt of his ultimate recovery.

ELECTION OF DISTRICT SURVEYOR BY THE METROPOLITAN BOARD OF WORKS.

ON the 17th inst., the Metropolitan Board of Works met to appoint a surveyor under the Building Act for the district of Greenwich.

The following document was submitted to the Board:

"The respectful Memorial of SIDNEY GODWIN, Fellow of the Royal Institute of British Architects.

Sir and Gentlemen,—Your memorialist ventures to approach you, and to say—

That he has passed seventeen years in daily assisting to supervise buildings under the Metropolitan Building Acts, with the object in view of being appointed a district surveyor, and is fully competent to discharge the duties of that office.

That, at two separate periods, he has received the confidence of your Board, by being appointed to act as deputy district surveyor.

That he has been before you as a candidate for a surveyorship under the Acts for outwaste districts without success, on account, as he has been informed on many occasions, of his having a brother a district surveyor, the district surveyor of South Islington.

That, at the election for Hammersmith, in May, 1863, he was at the top of the poll, and that, at the election for Knightsbridge, he was eventually elected; and, at elections for other parishes, your memorialist has been third or fourth on the voting list, while, at the last election, his name was much lower on the list, on account, as he has reason to believe, of the opinion above mentioned.

Your memorialist therefore humbly prays that your Honourable Board will take into consideration the time he has devoted, with a view to obtaining an appointment as district surveyor, and will be so good as to take into consideration his weight, and will grant him, on the next occasion, the object, for the attainment of which he has so long struggled at the cost of so many years of his life. If appointed, he will

devote his best energies to perform the duties satisfactorily.

With a view still further to lessen the objection against your memorialist, your memorialist prays that your Honourable Board grant his prayer, the present district surveyor of South Islington will, within twelve months from that event, place his resignation in your hands, to be dealt with as your Honourable Board may desire.

SIDNEY GODWIN.

Twenty-four candidates presented themselves, or were represented by medical certificates.

Fourteen of these were selected by vote to go to the poll. On the first voting after the selection the candidates stood in the following order:—1. Mr. Tabberer; 2. Mr. S. Godwin; 3. Mr. Matthews; 4. Mr. Lansdown; 5. Mr. Piper; 6. Mr. Neely; and ultimately Mr. Tabberer was elected.

CHURCH-BUILDING NEWS.

Handsworth.—During the past twelve months the chancel of Handsworth parish church has been undergoing a restoration. Messrs. M. E. Hadfield & Son, architects, were requested to draw a plan and plans for accommodation of the object, which were adopted, and these gentlemen were instructed to proceed with the work. New roofs of stout oak coupled rafters have been placed on the chancel and chantry, covered with Staffordshire tiling, carved braces being introduced at intervals. In removing the old roof of the chancel, the original plan of the chancel, in a mutilated condition were found. The walls of the chancel have been partially rebuilt; single lancets of the old form have been inserted in the south wall, the eastern windows having been repaired. The ancient sedilia and piscina have likewise been brought to light and restored. The north wall has been repaired; but perhaps the most important feature in the alterations is internally is the new chancel arch, of heavy stone, having bowtell columns with moulded capitals and bases, sustaining a narrow pointed arch of low and massive style of two orders, chamfered and moulded,—the whole details having been studied from the tower arch of the church. The nave and chancel have been lowered 2 ft. and resided with encaustic tiles, and the old monumental slabs on a bed of concrete. Stalls of oak for the choristers and communion rails of suitable design have replaced the high pews. A new organ to be placed in the Norfolk Chantry, in an oak case, is being built by Mr. J. Southey, of Sheffield. Kitchens, the walls and stone-work have been repaired and pointed, and the gable copings renewed and surmounted with fluted corbels. The earth has been lowered and the ground drained. In the north wall of the chantry two new windows have been inserted, with new buttresses and parapet, and the north wall partially rebuilt. The present style of architecture, to which this part of the church belongs. The works have been executed by Mr. W. J. Greenwood, of Handsworth, mason; Mr. J. Hayball, Sheffield, carpenter; Mr. J. B. Covill, plumber and glazier; and the tiling by Messrs. Harriman & Chadwick, the oak choir fittings by Mr. Marshall, of Handsworth. The whole has been carried out from the drawings of the architects and under the immediate supervision of Mr. Charles Hadfield. Although the chancel has thus been placed in a satisfactory condition, much remains to be done to the nave and aisle of the church westward, where a considerable amount has been made by the removal of the original tower archway, which has been fitted up as a vestry. A new floor and ceiling of moulded oak beams have been inserted for the ringers, and a lectern in oak has been given by the Rev. J. B. Mitchell, late curate of Handsworth.

Cambridge.—The chancel of the new church of St. Barnabas, Mill-road, Cambridge, has been opened. The entire building is designed to have an arcade of six bays, with a vestry on one side, and an organ-chamber on the other. The style of architecture is Third Pointed. The chancel is 34 ft. long by 22 ft. wide inside, and in height is 48 ft. to the top of the roof. The walls are of brick, with white brick facings on the outside. The windows, string-course, corbel course, and the roof are of stone. The east window is a large window is designed for stained glass. Nearly 200 persons can be seated in the chancel. The whole church, when completed, will accommodate nearly 600 adults, exclusive of the chancel. The nave and aisles to be added to the chancel will be 80 ft. long by 55 ft. broad; and the well-towered porch will be 40 ft. wide and 20 ft. high. The tower of the church erected is about 1,000 ft. of which amount some deficiency exists. The funds to complete the building have to be raised by subscription. The architect is Mr. Talbot Bury, of London. The builders are Messrs. Guinness & Attack, of Cambridge. The interior of the chancel is lighted with gas, and the seats are composed of rush-seated chairs (fixed).

Almeley.—The ancient Church of St. Mary, Almeley, has been opened for divine worship, after undergoing extensive restoration. The fabric was in a dilapidated condition, and the work was commenced some eighteen months ago, the architect being Mr. G. W. P. Allen, of London; and the contractor for carrying out the work, Mr. T. Holland, of Eardland, builder. The church is an old stone building, in the Decorated style, Second Period, and was partially restored about 1843, by cleaning the old stone pillars and bringing out the old oak ceiling; it also contains a nave, a chancel, a porch, a bell-chamber, organ-chamber, and tower with five bells and a clock. The roofs of the aisles, vestry, and porch have been renewed in oak, those of the nave and chancel repaired, and the whole lathed and tiled afresh; all the coping and other necessary and ornamental stone-work of the exterior having almost entirely disappeared, and new work in the shape of the old has been substituted, while the pavement, walls, and roofs, within the building, all testify in their changed condition that renovation was imperatively required. The renovations in the interior include the removal, first of all, of the plaster on the walls and the re-pointing of the same, and the lowering of the chancel roof by about 6 in. The chancel roof has been raised by about 4 ft., so disclosing what had hitherto been totally hidden—the upper part of the arch forming the division between the chancel and

2,000, and 3,000, have already been subscribed. The architect, instructed to carry out the work is Mr. Thomas Penrice, of London. The contract for the building was given to Messrs. T. & C. Anelay, the contract price being 3,001l. 11s. 8d. The church will be built in the Gothic style of the thirteenth and fourteenth centuries. It will have a western entrance, with deeply-recessed doors, facing St. James's-street, above which there will be a five-light tracery window. The gable will be terminated by a bell-turret, surmounted by a cross. The side elevations will be divided into six bays with two-light windows in each, with tracery in the heads, between the buttresses. At the eaves there will be a cornice, supported by corbels. The roof will be of high-pitched, of the angle of 57 degrees, and will be covered with Whitland Abbey slate on felt. The arch leading into the chancel will be built, but for the present will be filled in with brickwork. The organ-chamber, when built, will be situate in the last bay on the south side, nearest the chancel, and will communicate with the nave by an archway leading to the east end of the building, be 66 ft. by 32 ft., and will be arranged to accommodate 500 hearers. The interior will be fitted up with movable benches. The whole of the stone for the carving will be for the present left in block.

Pitchcombe.—The Bishop of Gloucester and Bristol has ordered the Pitchcombe Church, which has been restored by the parishioners. The work has been executed by Mr. Gye, of Pitchcombe, from the designs and under the superintendence of Messrs. Modland & Son, of Gloucester and London, at a cost not exceeding 800l. The west window is the gift of Mr. Augustus Matthews, in memory of his late father, Mr. Peter Matthews, who was the subject of the Baptism of John the Baptist. It is placed at the west entrance of the church, and the artists are Messrs. Clayton & Bell.

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* Date of appointment, July, 1863, and August, 1865.

the nave. The roof has also been opened out, new quarters being put on, diagonally, at the back of the old oak principals. The old roof of the nave has also been cleaned down. A new four-light stained-glass window, by Messrs. Burlison & Grylls, of London, has been inserted in the east end of the chancel. The head of the window is filled in with angles and chevrons; in the centre is the Virgin and Child, and St. Ann, and in the lower openings St. Gabriel and St. Mary, the right light being filled with St. Cuthbert and St. Boniface, and the left with St. Thomas and St. Augustine. The head of the window nearest the east end, in the south aisle, is filled in with the emblems of the Cross in stained glass; and the head of the head of the window, in the same aisle, with the Virgin and Child, on a ground of ruby diaper. In the head of the east window in the north aisle, is the Crucifixion, and the window next it (the first of those in the north aisle counting from the chancel) is filled in with the arms of several families of distinction. These windows are also the work of Messrs. Burlison & Grylls. A new roof-screen, carved in oak, the work chiefly of the builder himself, has been put up. New open benches of oak take the place of the pews of former days, the old material,—some of it carved,—being used in panneling. A portion of the old panneling is used to form the top of the aisle, and the rafters only being added. The altar is now, and like the rest of the work, is of sound heart of oak. For the present the tower remains as it was, excepting for some little pointing. The entire cost, including the stained glass, amounts to about 1,800*l.*,—towards which Mr. Gibson Watt, the chief landowner in the parish, contributes 500*l.*, and the Ecclesiastical Commissioners 500*l.* The total amount subscribed, up to the present time, is about 1,400*l.*

DISSENTING CHURCH BUILDING NEWS.

Durham.—A new Congregational Chapel has been opened here for divine service. The architect was Mr. Chas. Pertwee, of Chelmsford. The building occupies the site of the old chapel, and is of red brick and slated, partaking of a Romanesque character, the openings generally having semi-circular heads, relieved with white arches, string, and stone dressings. The entrance to the building is through triple arches in the centre gable, supported on columns with carved capitals, leading into a vestibule or loggia paved with encaustic tiles. Entrances and staircases on each side of the building communicate with the galleries. Internally a gallery, with open iron-work roof, supported on cast-iron columns, runs round three sides of the building, the end opposite the pulpit being semicircular, and in the rear of the pulpit, in a semicircular space, obtained over the vestries, is provided an organ and singers' gallery. The roof is partly open-timbered and vaulted, divided into panels by arched principals and perforated ribs, through which ventilation is arranged. The ground-floor and galleries are fitted up throughout with open benches of stained and varnished deal. The aisles are paved with encaustic tiles and cement. The pulpit, which is of stained deal, is placed upon a raised semi-circular dais, upon which are arranged seats for the deacons. The light is by means of gas, and the heating, by a hot-air circulating apparatus fixed in the basement. The work has been carried out by Messrs. Cole Bros., of Thaxted, builders, under the direction of the architect, at a cost of 2,450*l.*, inclusive of the purchase of a portion of ground, erection of boundary walls, fences, and all incidental expenses. Accommodation is provided for 900 persons.

Gravesend.—The memorial stone of the English Presbyterian Church, in course of erection in the Grove, has been laid. The church will be capable of accommodating 650 persons, and has been erected by Messrs. Bell & Sonnes, of Southampton, from designs by Mr. Alfred Beaborough.

Sheffield.—The foundation-stone of a new chapel, in connexion with the United Methodist body, at Pye Bank, has been laid. Mr. T. Simpson, of Nottingham, is the architect. The chapel will be situated at the angle of Pye Bank and Haywood-street, some 200 yds. from the place of worship at present occupied by the United Methodists. It will be in the Early English style, and will be built in two stories, the basement forming a school. The level of the school is elevated, and the chapel will be on a

level with Pye Bank. The chapel is to be amphitheatrical, and will furnish accommodation for 1,200 persons. Ingress and egress can be had at either end from two angular towers. The school is also laid out in amphitheatrical form. It is surrounded by vestries or class-rooms, above which is a horse-shoe gallery, which will accommodate 1,000 children. This gallery will be appropriated to the use of the junior scholars, whilst the arena will be set apart for the seniors. At the end of the school will be a forum, from which the children can be addressed, and which will render the room easy of adaptation to the purposes of a public hall or a lecture-room. The school will be 118 ft. high, 76 ft. in length, and 66 ft. wide in the extreme dimensions, and on the ground floor or arena it is 54 ft. long and 35 ft. wide. The dimensions of the chapel are of similar extent. The basement story is to be built in rock-faced stone with white dressings, and the superstructure in brick with polychromatic dressings. The cost of the whole will be about 1,000*l.*, and the contractors have been placed in the hands of Mr. James White, builder.

Acton.—The memorial stone of a new Congregational Chapel at Acton has been laid by Mr. H. Wright, J.P., Kensington. The building, which will be of Gothic design when completed, will seat on the ground floor 500 people. The total cost will be about 4,500*l.*, and the work has already been promised, and among the donors are Mr. Samuel Morley, M.P., for 500*l.*, and Mr. Charles Walton, for a similar amount.

Darlington.—The present sombre-looking building in Archer-street, used by the Baptist denomination as their place of worship, says the *Local Chronicle*, will be superseded by a new structure in the Gothic style, the foundation stone of which has been laid by Mr. J. B. Pease. The building is to be Italian in style, and is to be composed of Forest stone. The length of the entire building on the ground-floor is 56 ft. by 44 ft.; and on the gallery-floor, which ends over the entrance, 66 ft. by 44 ft. The point at the entrance of the chapel has two staircases leading into the side galleries. At the rear of the building, on the north side, there are two class-rooms, 13 ft. by 11 ft. Adjoining these is a lecture-room, 27 ft. by 15 ft.; and on the south side a minister's vestry, 15 ft. by 12 ft. Over these buildings is the Sunday-school, which is 125 ft. by 22 ft. The new building will give accommodation to 600 persons, 350 on the ground floor and 250 on the gallery floor. This will exceed the provision given for congregations in the present chapel by above 350. A platform will be used instead of a pulpit, and behind this, in the centre, on the same level, will be an organ-chamber. The whole of the pews are to be without doors, and will be of stained-pine-plate. The gallery will be fronted with ornamental ironwork, to avoid the heavy appearance which would be caused if formed entirely of woodwork. The building was designed by Mr. W. Pescey, of Darlington, architect.

Langley Mill.—The memorial stone of a new Wesleyan Chapel at Langley Mill, Hants, has been laid. Mr. Smith and Mr. John Gething Bowes (of Langley Mill), have undertaken to build this new chapel. There will be attached to the chapel a Sunday school, a vestry, and a retiring-room, the cost being set down at 800*l.* Mr. J. Barber, of Eastwood, is the architect. **Whitechapel.**—The foundation stone of the Halifax Guardian, the corner-stone of a new Wesleyan Methodist chapel, to be situate in a populous part of this locality, was laid. The building, of which Mr. S. Uley, of Halifax, is the architect, will be in the Italian style of architecture, and will accommodate 540 persons. Adjoining the building will be a vestry, and the estimated cost of the whole will be 2,500*l.*, towards which 1,000*l.* were contributed by the representatives of the late Mr. W. Heap; 100*l.* by Col. Akroyd, M.P.; 50*l.* by Sir F. Crossley, bart., M.P.; and 100*l.* by the Wesley Chapel Building Committee.

Newcastle-upon-Tyne.—The chief-stone of a new Wesleyan Chapel at Newcastle has been laid by Mr. Newcastle. The edifice has been designed by Mr. S. Oswald, of Newcastle, architect, and will be of stone, in the Early English style, having five lancet windows in the north, or front, gable, and ten lancet windows in the east and west walls.

The roof will be entirely exposed to the air, and constructed with iron and deal principals of timber. The north front will have two entrance porches at the sides, and a vestry and school-room are to be annexed to the south end of the church. About 270 sittings will be provided, and the cost will be about 800*l.* Mr. T.

Alexander, mason, of Newcastle, and Messrs. Gresson & Stockdale, carpenters, of Gateshead, are the chief contractors. The church will be warmed and ventilated by apparatus devised and supplied by Messrs. Lewis & Co., of Middlesbrough.

Belper.—It has been resolved to build a new Independent Chapel at Belper, at a cost of 3,000*l.*, on the site of the old chapel. The plan of the chapel has been prepared by Mr. Woodhouse, of Bolton, and is to be in the Gothic style, with a tower and spire, and capable of accommodating 450 persons. The present chapel was built about a hundred years ago, and it has been thought better to take it down and build a new one, rather than to repair it. The greater part of the money has been provided.

SCHOOL-BUILDING NEWS.

Bowling.—The foundation stone of some new schools in connexion with St. John's Church, Bowling, is to be laid on the 28th of this month, by Mrs. H. W. Ripley. They are to be erected immediately behind the old ones, on a site which has been purchased at a nominal price from the Bowling Iron Company. The plans have been prepared by Messrs. T. & J. H. Ripley, architects.

The schools will be erected in the Gothic style of architecture of a character suitable for school purposes. The plan consists of three school-rooms, in the shape of the letter H, for infants, boys, and girls, and there will also be class-rooms. The aspect of the building will be south, and the main front will look into the playground. The infants' school will be 18 ft. in length by 19 ft. in breadth; the girls' school, 48 ft. 6 in. by 19 ft.; and the boys', 56 ft. by 19 ft. The entrances to the schools will be separate, and the yard accommodation for the infants and girls, and the boys, will be also separate and distinct. Internally, the rooms will be 15 ft. 6 in. in height. The main front of the main gables will be lighted with ornamental circular windows, and the remainder of the windows will have stone mullions and transoms. The schools inside will be boarded rooved to the height of 4 ft. with dressed and stained woodwork, and the infants' school and class-rooms will contain galleries for the children. The boys' school is assigned to accommodate 400 scholars, and the cost is estimated at about 2,000*l.* exclusive of the site.

Brightwell and Sotwell.—The school-room erected for the united parishes of Brightwell and Sotwell has been opened. The building is of red and grey bricks, the roof covered with red tiles; and the principal room is 33 ft. long by 23 ft. wide. The partition between the school-room and class-room is formed by folding-doors, which slide back, and thus form a large room, 60 ft. long. The passages on each side of the class-room are used as cloak-rooms, and lead to the end-offices, &c. At the back of the school-room there is a good roomy playground, fenced in. The building was erected by Mr. G. Wheeler, of Dorchester, Mr. Buckridge being the architect.

Gloucester.—St. Luke's new schools have been opened. The architect of the building is Mr. Alfred W. Mabey; the builder, Mr. R. J. Moreland, both of Gloucester. There are three school-rooms placed side by side,—the boys' on the left, the girls' in the centre, and the infants' on the right. Each room is 20 ft. wide, and the three are respectively 70 ft., 60 ft., and 65 ft. in length. A large entrance-porch, serving also as a hat and cloak room, and a class-room, containing an average space of 250 sq. ft., are provided for each of the three rooms; and there are also lavatories attached. Internally, from floor to ridge, the height is 27 ft., and to the collar-beam of the roof 16 ft. They are lighted by large stone-mullioned windows at the sides and ends. Externally, the schools are constructed mainly of red and white bricks at intervals. The central school-room has a circular window deeply recessed, the arch supported by carved columns, and the whole surmounted by a bell-turret, wherein is hung a bell. The two side schools have three-light windows at each end, with stone mullions, heads, and cills. In order to secure more light and air, the side windows have been carried up and finished with carved gables, and the ventilation is thereby increased by square-framed louver ventilators, finished with spirals and finials, and fixed in the centre of each roof. The master's house consists of a living-room, kitchen, scullery,

pantry, larder, coal-store, and so forth, on the ground floor, and of three bedrooms in the upper story. The buildings are inclosed in front with brick piers finished by stone caps and iron railing and gates; the other fences are of wood and brick. The yards have been fitted up with Monie's earth-closets.

STAINED GLASS.

Dunster Parish Church.—The Stained glass window, already described, has now been put up by Messrs. O'Connor in the north transept of the church. The committee for the Schofield window for the south transept, which we have also described, have informed Messrs. Clayton & Bell that the work has given great satisfaction.

St. Mary's, Crumpton.—The stained window of this church has just been filled with painted glass. The architecture of the church is an adaptation of the Early Decorated period. The window, which consists of five lights, with upper tracery, is, with one exception, the largest stained window in the neighbourhood of Manchester. The style of the painted glass has been designed to accord with the architecture. The subjects represented in the second portion of the Apostles' Creed, the articles relating to our Lord. The lower range of subjects represents the Incarnation, the upper range the Passion, and in the tracery is the Ascended Majesty. The three central lights are grouped together. The lower ones represent the Nativity of the Saviour, with the Adoration of the Shepherds and of the wise men from the East. The upper ones represent the Crucifixion, with St. Mary and St. John at the foot of the Cross. Flanking these subjects in the side-lights are, below, the Annunciation and finding in the Temple; above, the Agony in the Garden and the Descent from the Cross. In the tracery above is represented the Saviour in Majesty, with the Virgin Mary and St. John Baptist below. In the surrounding compartments are busts of the two apostles, St. Peter and St. Paul, and of the archangels St. Michael and St. Gabriel. The cost of the window, which is several hundred guineas, has been generously given. The work has been executed by Messrs. Lavers, Barrand, & Westlake, of London and Manchester. This is the second window which has been filled with painted glass in this church. The former one, to the memory of the Rev. J. W. Wylde, first rector of the parish, is a two-light window in the south transept and represents the Good Shepherd, and "Behold, I stand at the door and knock." This was also executed by Messrs. Lavers, Barrand, & Westlake.

Widmers Church.—The stained-glass window, purchased from the prior of Furness Abbey, at the dissolution of the monastery, and removed to the parish church, Widmers, 335 years ago, has been removed to Radcliffe, and is to be restored, from the drawings of similar windows in the Bodleian Library, provided funds can be raised for the purpose.

Coniscliffe Church.—The east window of this church has just been fitted with stained glass. The style of the window is Early English, and it is divided into three compartments. In the central one is a large picture of the Crucifixion, with St. Mary and St. John standing at either side of the cross; in a space beneath is the "Last Supper;" the subjects in the side-openings are the "Agony in the Garden," "Betrayal," "Scourging," "Entombment," "Resurrection," and "Ascension." The ground-work is grisaille, on the best antique plan, and a border surrounds each opening. The window is the work of Mr. Bagley, of Newcastle-on-Tyne. A painted reredos has also been placed against the east wall by the same artist. The church has been much improved of late by the erection of a porch on the north side, and is shortly to be crowned for lighting, by Skidmore. The whole cost will be defrayed by subscriptions, raised through the exertions of the vicar and Mrs. Lynn.

St. Chad's, Saddleworth.—A new stained-glass window of three compartments has just been inserted in the church of St. Chad, Saddleworth. It is the gift of the late Mr. Radcliffe, of Boarshurst, in the said district, to the memory of her nurse, Mr. J. Nelson, late of Oldham and Bowdon. Subjects illustrated:—Christ and the Woman at the Well of Samaria, the Widow's Mite, and the Meeting of Christ with Mary in the Garden, after the Resurrection. This makes the eighth stained-glass window in the window with Scripture illustrations and subjects placed in the above church, and executed by

Messrs. Geo. and J. R. Shaw, architects and glass-painters, Uppermill, near Manchester. The large east window of five lights, containing about 100 sq. ft. of glass, has also been filled with the same firm. The Last Supper occupying the five compartments below the transept, and the Crucifixion the portion above the transept, the tracery being filled in with a varied collection of figures and ornamental work.

FROM VICTORIA.

Melbourne.—The corner stone of a college, which is to be affiliated with the Melbourne University under the title of Trinity College, was laid on the 10th of February by the Bishop of Melbourne. The building stands near the south-west corner of the reserve, to the north of the University, and considerable progress in the erection of it has already been made by the builder. Only a small portion of the whole design, namely, the provost's lodge, &c., has been undertaken, and it is to cost 7,500*l.* George Fuller, of Sandhurst, being the contractor. The hall, with the offices and corridor, is erected of red brick with white dressings. The walls are built hollow, open at top and bottom, ensuring a draught to cool them in the summer time. The hall, 30 ft. long, 21 ft. wide, and 16 ft. high, is enriched with a cornice, centre drawers, and numerous ornamental ventilators. The funds in hand amount to 4,000*l.* and the buildings will be carried out as far as the money will allow.

Strathfieldsaye.—The Strathfieldsaye Shire council has been erected by the Strathfieldsaye shire council at a cost of 7,000*l.*, from the design of Mr. George Steane, the shire surveyor; Mr. George Fuller, of Sandhurst, being the contractor. The hall, with the offices and corridor, is erected of red brick with white dressings. The walls are built hollow, open at top and bottom, ensuring a draught to cool them in the summer time. The hall, 30 ft. long, 21 ft. wide, and 16 ft. high, is enriched with a cornice, centre drawers, and numerous ornamental ventilators. The funds in hand amount to 4,000*l.* and the buildings will be carried out as far as the money will allow.

The shire of Strathfieldsaye is essentially a land shire, and produces some of the finest cereals in the colony, and it is also the vineyard of Bendigo. There are not at present many manufactures; the only one of any considerable importance being an extensive tannery, making great quantities of leather for the colonial and English markets. The shire is bounded by the Court-house, Kehrna, is of red brick, with white brick facings, and is covered with a slate roof. The whole when complete will cover a space of 71 ft. by 76 ft. The rooms now built are six in number, the principal being the court-house, which is 35 ft. by 20 ft., and the municipal chamber, 17 ft. by 24 ft. The object was intended for the office of surveyor and clerk of the courts, on the Crown side of the building, and for the offices of the town clerk and surveyor on the municipal side. The original plans provided for plaster ceiling; but, on further consideration, the borough council deeming that the great heat of the district required wood rather than plaster, the ceiling of their part of the building is accordingly in panel, from designs by Mr. Pascoe, their town clerk and surveyor, and picked out in colours red, white, and blue, with two glass chandeliers suspended from the centre. The total cost of the building, as it now stands, is about 2,300*l.*, of which Government gives 850*l.* The architects were Messrs. Geo. and J. R. Shaw, the contractor, Mr. James Mackintosh, of Echna; and the works have been carried out under the superintendence of Mr. Pascoe, the town surveyor.

Books Received.

Eighty-two Illustrations on Steel, Stone, and Wood. By GEORGE CRUKSHANK. With letter-press description. London: W. Tegg.

In a smart quarto volume, Mr. Tegg has here brought together selections from the illustrations of various books produced at times given by the veteran artist and sound earnest man, the contractor, Mr. James Mackintosh, of Echna; and the works have been carried out under the superintendence of Mr. Pascoe, the town surveyor.

present day, in being compositions, real pictures, having half a dozen or a dozen figures in them, with expression in the faces, the surrounding background carefully filled in, and illustrations unmistakably, small as they are, the passage to which they are appended, instead of the everlasting two figures, lame and nubby-pammy, which now form the staple of too many illustrated works. The volume is equally interesting and amusing.

VARIOBUM.

"THE Holiday Number of London Society" deals as usual with excursion-trains, sea-side rambles, and Continental experiences, and has a full allowance of pictures.—The *Illustrated News* of last week contains a large and remarkable view of Stanley G. Bull, Beam, Bond, Square, and Flat Iron, for the Use of Naval Architects and Shipbuilders. By Chas. H. Jordan. London: Epon. The author of these tables states that he has carefully calculated and compiled them for his own use, as he must feel the want of such tables.—The *Tin Men's Pocket Companion*, By C. Gase, Gase & Co., Walschae. This is a small card, with three tables, useful in the measurement of wood.

Miscellaneous.

Tin-lined Lead Pipes.—The patent of Mr. Haines, of Liverpool, is thus described in the *local Daily Post*.—Mr. Haines's patent may be simply described as a lead encased block tin pipe, which it is found resists acid corrosive influences. It is now being manufactured in considerable quantities. We had an opportunity of visiting the factory and of witnessing the process of manufacture, which, however, with one single and most important exception, is the same as that adopted in the production of the ordinary lead piping. The exception is in the casting of the ingots. The molten lead is first poured into a mould, in which, by the insertion of an iron bar, a space is left for the tin. When the lead has cooled the bar is removed, and a mandril of the exact width which the pipe is to take is inserted. Around this again the molten tin is poured, and when the mass has cooled it goes through the usual process until it emerges in the form of a pipe. The engineer to the Glasgow Corporation works has tested the piping with reference to its cohesive power, and has reported that it has on an average of three tested thicknesses a cohesive strength double that of the ordinary lead pipe. The result of the experiments at the Liverpool waterworks on the 5th of May last, when pipes were tested of various thicknesses of the ordinary lead piping tested had an average cohesive strength of 2,840 lb., while the lead-encased tin pipe showed an average cohesive strength of 6,351 lb.

A Civic Sanitary Staff.—The authorities of Glasgow, says the *Daily Express*, have at length the satisfaction of having organised the most complete "sanitary department" probably ever established as a permanent branch of administration in any of our British cities. The object aimed at is as less than to prevent disease,—not only to wipe away the reproach which Glasgow has of late years been incurring from the mortality returns, but to render the town more clean and sweet to live in, to improve the habits and condition of the poor, and to secure more vigorous health and greater length of days to all. The "Sanitary Inspection Service" consists of a chief officer, five district inspectors, and thirty ordinary nuisance inspectors, each of whom has a section of one of the five districts into which the city has been divided under his charge.

Dundee: Strike among Masons.—There are some disputes at present between the operative masons employed in the quarries and the quarry masters. The men contend that all apprentices, especially the quarries, should be indentured, that they should be paid by the day instead of by the piece; and that no stones should be dressed in the quarries. At a meeting on Friday week, the first two points were conceded by the quarry masters, but the third point remains unsettled. We understand that some of the master builders support the men regarding the third point. About 100 men are out on strike till the remaining difference is settled.

Leicester-square.—In reply to Captain Dawson-Damer, Mr. Ayrton said that he had not been able to ascertain whether any person claimed to be the owner of Leicester-square proposed to let it on a building lease. If such were the case, he could only interfere by means of a private Bill, which, according to the Standing Orders, he would be precluded from introducing during the present session. Besides, it would be a dangerous thing if, when a local authority neglected its duty, the First Commissioner of Works were to come forward to undertake it, as the result would be to throw on the Treasury an expense which ought to be paid out of the local funds. If the statement in question were correct, it was only a practical illustration of the necessity for a reform of the local government of the metropolis. He had endeavored to press this subject on the attention of the House by a motion this morning, but the Select Committee on the subject had been appointed, and he hoped his right hon. friend the Secretary of State for the Home Department would be able next session to deal with this very important question.

The Opening of the New Independent College, at Taunton.—The Independent College, at Taunton, of which we gave a review and plan in our volume for 1869, pp. 186, 187, has now been formally opened. The building is situate in a wooded estate of 25 acres, called Fairwater. It is about half a mile from the railway station at Taunton, and is visible to passengers on the Bristol and Exeter railway. The present arrangements provide for the reception of 150 boarders, but admit of extension for the accommodation of 200. The style is Tudor-Gothic, and the building is of West Leicestershire stone, with Bath stone facings. In the grounds are covered play-ground, gymnasium, tennis-court and bathing-place. The Fairwater mansion adjoining supplies a residence for the principal, and a considerable apartment available for other purposes. The cost of the land was £5,760. 4s. 7d.; the contract for building, 10,500l.; and the drainage, ventilation, architect's fees, clerk of works, &c., bring the total cost to nearly 20,000l. The architect was Mr. Joseph James, London; and the builder, Mr. Henry Davis, Taunton.

The Oxford Architectural and Historical Society.—The excursion to Warwick took place on Saturday before last, when between thirty and forty members and their friends visited the castle, the church, and other buildings. By permission of the Earl of Warwick the society enjoyed unusual facilities for viewing the castle; as in addition to the usual portions shown to visitors, the society was permitted to inspect the various vaulted chambers in the basement. The general opinion of the members was that there were none of the existing buildings of earlier date than the reign of Edward III. In the reign there were two Earls of Warwick, named Thomas, father and son, and by them the greater part of the existing castle was erected. This included the great hall, and the range of rooms westward, Coeur's tower, the Barbican, the basement of Guy's tower, and the eastern side of the fortified enclosure. The upper part of Guy's tower was erected in the fifteenth century, and there are also Elizabethan and modern additions.

The Gallery of Illustration.—The plot of Mr. and Mrs. German Reed's new entertainment, "Our Island Home," told in straightforward language, would seem the most suitable and appropriate one that a brave author had ever ventured to commit to an intellectual British public. Still it is very droll, looked at from the right point of view, and Mr. Reed has composed for it some very bright and sparkling music, so that being acted with wonderful nerve and unflagging spirit by Mr. and Mrs. Reed, Miss Fanny Holland, Mr. Arthur Cecil, and Mr. Corney Grain, it will doubtless run a considerable time, and make a large number of people laugh. An effective rescue by the sea has been produced for Mr. O'Connor, and the dresses are charmingly fanciful. "The School Feast," by Mr. Corney Grain, of which we have already spoken with warm commendation, concludes the entertainment. Mr. Grain is an actor as well as a musician, and will make his mark.

Engineers for India.—It is reported, says Nature, that the Secretary of State for India has determined upon establishing in this country a complete College of Science for civil engineers, for the education of those who are to be employed on the extensive Government works in India.

Public-Houses without the Drink.—The sixth "public-house without the drink" was opened on Tuesday, May 31st, at Chapelton, Leeds. The well-known motto, "Come and Welcome," appears conspicuously to all passers-by (whether on the top of the omnibus or on foot), as do also the large characters of "British Workmen, No. 6," while the old sign of the "Swan" has been erased to make way for the words familiar in other parts of the town:—

"A public-house without the drink,
Without any sign, mark, word, or think,
Then safely house return."

The tap-room and inner parlour are supplied with daily papers and monthly periodicals, while the large club-room upstairs is admirably adapted for meetings of various kinds which may be held in connexion with the place. Clubs and sick societies can here be accommodated without the necessity of drinking for the good of the house. The opening was celebrated by a tea, beautifully provided by the ladies of Chapelton, in the Wesleyan schoolroom; so there was drink after all.

Building Land, Brighton.—Some plots of land sold lately, by order of the Town Council, realised the sum affixed:—Lot 1. Freehold plot of building land, numbered 73 in North-road, adjoining on the east the site on which the Dolphin Inn is to be rebuilt, presenting a frontage to North-road of 18 ft. 6 in., with a width at the north end of 18 ft. 10 in., a depth from north to south on the east side of 40 ft. 2 in., and on the west side of 39 ft. 280l. Lot 2. Plot of freehold building land, abutting on the south to No. 5, Marlborough-place, presenting a frontage to Marlborough-place of 23 ft., a like width at the west end, a depth from east to west on the north side of 56 ft. 1 in., and on the south side of 56 ft. 7 in., 400l. Lot 4. Corner plot of freehold building land, 23 ft. to Marlborough-place and 57 ft. 8 in. to Church-street, having a width at the west end of 25 ft., and a depth from east to west on the north side of 57 ft. 1 in., 560l.

Sales of Property in Bromsgrove and Bromyard.—Mr. Cotton offered, at the Dog and Pheasant Inn, Bromsgrove, 47 a 2 r. 6 p. of land at the Licker, and after an spirited competition it was purchased by Mr. Walter James, for Mr. James Woodman, Redditch, for 1,560l. A cottage and 2,760 yards of land near the above was sold to Mr. J. Lea, for 157l. Mr. Nathaniel Taylor, auctioneer, has sold by auction several freehold properties in and near Bromyard, belonging to the late Mr. Humphrey Bosman, deceased. A freehold property, containing 10 cottages, outbuildings, and a 5 a. 2 p. of land, situate at Edvin, Ralph and Edvin Loach, sold for 540l. A freehold house and premises, situate in High-street, let at 13l, sold for 240l.; and a similar house, adjoining, let at same rental, was knocked down for 245l. There was a good attendance, and the biddings were given with considerable spirit.

Egyptian Antiquities.—At the Syro-Egyptian Society (Hart-street, Bloomsbury), last week, Mr. Bonomi described the collection of antiquities found in Egypt by the late Mr. Robert Hay, of Linplum, and saw in the rooms of the Society. The collection is very large and valuable, 1,683 items are mentioned in the catalogue, and is now for sale. One of the most noticeable objects is a statuette of the Ptah of Thebes, 26 in. high, an extraordinary work in metal. The core is bronze, which has been covered with a white stucco to represent the white mysterious dress of this god. The face and hands, as well as the neck, have been gilt; the eyelids and eyebrows, the scalp, and a square projection in front, are in a composition of antimony, which is of a considerable thickness, overlying the bronze core at this part. The eyes have been inserted.

Water in Edinburgh.—Mr. Gale, C.E., has issued a report on the water supply of the city of Edinburgh. His general conclusions are that Edinburgh is at present using nearly 9 million gallons of water a day; that the quantity must be reduced to 7 million gallons a day till the reservoirs get filled up; that not more than 7 million gallons a day can be got from the works in a moderately dry year; that the reduced quantity should be regularly spread over the summer; and that the only proper way to accomplish this is to institute a system of intermittent supply. This reads very much like going backwards.

Metropolitan Tramways.—A committee of the House of Commons has sanctioned another extension of the Metropolitan tramway system. The projected line will start from a point near the Bank, and will pass through Moorway-street, the City-road, Islington, and the Holloway-road, to the Highgate-archway, with intersecting branches from the leading thoroughfares of the district. The Committee have declined to sanction the crossing of Westminster Bridge by tramways.

A Forgotten Bell.—I am putting on a spire to the Archbishop's Church, near Alnwick, at the cost of a county squire, as a memorial of his son, Captain Carr, who was killed in New Zealand, and I found an old bell in the belfry, the existence of which has been lost sight of for generations. It bears an inscription in German. It strikes me the inscription is unusual.

"Antonius me nomen est. hic granit mlt par: :
m: cccc: lxxxx: +"

"Antonius is my name: I was made in the year 1480."—F. R. W.

Ecclesiastical Dilapidations Bill.—In the House of Lords, the Archbishop of York moved the second reading of this Bill, which, he explained, was based on a report of a joint committee of the Convocations of Canterbury and York. At present there was no satisfactory mode of enforcing repairs, and it proposed that a surveyor of high position should be appointed in each diocese, who, whenever ordered, and on any presentation to a benefice would make a survey. The Bill was read a second time.

Starting.—The church people of Hanley were on Saturday astonished by the announcement that "in consequence of necessary repairs," there would be no service in the Old Church on the following day. On inquiry as to the reason, it was ascertained that some slight cracking of the ceiling had induced a professional inspector. The architect called in has pronounced that the rafters are in such a dangerous state that it is next to miraculous that the entire roof has not fallen in long ago.

Fall of a Building.—The other morning the premises of the Royal Insurance Office, Park-road, Leeds, beside which excavations for a new building were being made, suddenly collapsed and became a heap of ruins. Fortunately the clerks were warned a few seconds before the accident, and they rushed out and escaped; thus no lives were lost and no injuries sustained.

New Public Hall for New Mills (Stockport).—The public interest of this township for a new and commodious public hall, for the purposes of a mechanics' institution, reading-room, &c., and a large room for the intended transaction of the magistrates' business, concerts, &c., has led to the laying of the foundation stone of the intended structure. The streets were gaily decked with flags, and there was a procession with other ceremonial.

Competition, Hull.—The plans submitted by Mr. Samuel Murgrove, Hull, have been selected in a recent competition for a Primitive Methodist Chapel proposed to be built in Lincoln-street, Hull; and he has been instructed to prepare working drawings for the erection of the buildings forthwith. There were seventeen other designs submitted.

International Exhibition of 1871.—The commissioners have resolved to set aside one guinea out of every season ticket sold at three guineas, through the Society of Arts, to purchase works of art and industry out of the Exhibition, for circulation throughout the United Kingdom. This determination will be open to misconstruction, we fear, by-and-by.

New Temperance Hall at Hanley.—The foundation-stone of a temperance hall has been laid in New-street, Hanley. The building is to be 20 yards by 12 yards, and to consist of a large room, with gallery at one end, and committee-room under the gallery. The work is to be done under the direction of Mr. Lockett, and the estimated cost of the new building is 800l.

Ladies' Sanitary Association.—A bazaar and fane sale in aid of the funds of the Ladies' Sanitary Association, will be held (by permission of Madame Ernest de Bunsen), at Abbey Lodge, Hanover Gate, Regent's Park, on Tuesday and Wednesday, the 25th and 26th inst. A number of distinguished ladies will take part.

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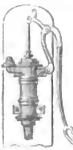
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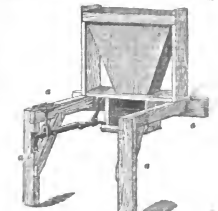
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